MECHANICAL DEVICES
OF
THE TYPEWRITER

A HANDBOOK DEALING WITH THE USE AND ADJUSTMENT
OF THE VARIOUS TYPEWRITER DEVICES

BY
R. T. NICHOLSON, M.A.

THE
JOHN CRERAR
LIBRARY

MECHANICAL DEVICES
OF
THE TYPEWRITER

A HANDBOOK DEALING WITH THE USE AND ADJUSTMENT
OF THE VARIOUS TYPEWRITER DEVICES

BY
R. T. NICHOLSON, M.A.

LONDON: SIR ISAAC PITMAN & SONS, LTD.
BATH, MELBOURNE, TORONTO AND NEW YORK

PRINTED BY
SIR ISAAC PITMAN & SONS, LTD.
LONDON, BATH, MELBOURNE,
TORONTO AND NEW YORK

TABLE OF CONTENTS

SECTION		PAGE
I.	INTRODUCTION	1
II.	UNPACKING AND MAKING READY	3
III.	ON THE USE OF TOOLS, AND "TINKERING"	5
IV.	POSITION OF THE MACHINE	5
V.	THE KEYBOARD	6
VI.	TOUCH	6
VII.	ON PREVENTING AND REMOVING DIRT	7
VIII.	OILING	9
IX.	CLEANING THE TYPES	13
X.	INSERTING THE PAPER	14
XI.	ADJUSTING THE PAPER	18
XII.	THE PRINTING POINT	20
XIII.	THE MARGINAL STOPS	22
XIV.	THE KEYBOARD LOCK	27
XV.	THE MARGINAL RELEASE	27
XVI.	ACCOMMODATING PAPER OF DIFFERENT WIDTHS; ENVELOPES, CARDS, ETC.	29
XVII.	THE SHIFT-KEY	32
XVIII.	THE SHIFT-LOCK	33
XIX.	THE CARRIAGE RELEASE	34
XX.	BEGINNING A NEW LINE	35
XXI.	ADJUSTING THE LINE-SPACING	37
XXII.	VARIABLE LINE-SPACING	38
XXIII.	THE BACK-SPACER	41
XXIV.	CORRECTIONS	42
XXV.	THE RIBBON	44
XXVI.	THE RIBBON REVERSE	46
XXVII.	PUTTING ON A NEW RIBBON	49
XXVIII.	THE YOST PAD	56
XXIX.	THE TENSIONS	56
XXX.	MANIFOLDING	58
XXXI.	STENCIL WORK	59
XXXII.	TABULATION	60
XXXIII.	CARRIAGE BRAKING DEVICES	69
XXXIV.	REMOVAL AND REPLACEMENT OF THE CYLINDER	70
XXXV.	REMOVAL AND REPLACEMENT OF THE CARRIAGE	71
XXXVI.	END-GUIDES (REMINGTON)	74
XXXVII.	CENTRING-SCALE (UNDERWOOD)	75
XXXVIII.	SPEED ESCAPEMENT (MONARCH)	76
XXXIX.	RULING PENCIL (OLIVER)	77
XL.	RIBBON WIDTHS	77
XLI.	WRITING-ADDING-SUBTRACTING MACHINES	78
XLII.	TYPEWRITER TERMINOLOGY	79

LIST OF PLATES

BARLOCK

PLATE		PAGE
A.	FRONT TOP VIEW	i
B.	BACK TOP VIEW	i
C.	BOTTOM VIEW	i
D.	PAPER CARRIAGE	i

EMPIRE

E.	FRONT VIEW OF MACHINE	iii
F.	CARRIAGE : RIGHT-HAND END	iii
G.	CARRIAGE : LEFT-HAND END	iii
H.	SECTIONAL VIEW OF TYPE ACTION	iii
I.	SECTIONAL VIEW OF TYPE ACTION	v
J.	DETAIL OF CARRIAGE ACTION	v
K.	LEFT SIDE VIEW	v
L.	BACK VIEW	v

MONARCH

M.	FRONT VIEW	vii
N.	BACK VIEW	vii
O.	SECTIONAL VIEW	vii

OLIVER

P.	CARRIAGE (FRONT VIEW)	ix
Q.	,, (VIEW OF UNDERSIDE)	ix
R.	LEFT-HAND END OF CARRIAGE	ix
S.	RIGHT-HAND ,, ,,	ix
T.	CARRIAGE (BACK VIEW)	ix
U.	ESCAPEMENT	ix
V.	TOP VIEW OF MACHINE WITH CARRIAGE REMOVED	xi
W.	UNDERSIDE OF MACHINE	xi

REMINGTON

X.	FRONT SIDE VIEW	xiii
Y.	RIGHT-HAND END OF CARRIAGE	xiii
Z.	BACK VIEW	xv
AA.	ESCAPEMENT	xv

ROYAL

BB.	FRONT VIEW	xvii
CC.	BACK OF CARRIAGE	xvii

L. C. SMITH

DD.	FRONT VIEW	xix
EE.	BACK VIEW	xix

SMITH PREMIER

FF.	LEFT SIDE VIEW	xxi
GG.	RIGHT SIDE VIEW	xxi
HH.	CYLINDER	xxiii
II.	TOP VIEW (CARRIAGE REMOVED)	xxiii
JJ.	BACK VIEW	xxv
KK.	RIBBON MECHANISM	xxv

UNDERWOOD

LL.	BACK VIEW	xxvii
MM.	LEFT END OF CARRIAGE	xxvii
NN.	RIBBON MECHANISM	xxvii
OO.	RIGHT FRONT VIEW	xxvii
PP.	LEFT FRONT VIEW	xxvii

YOST

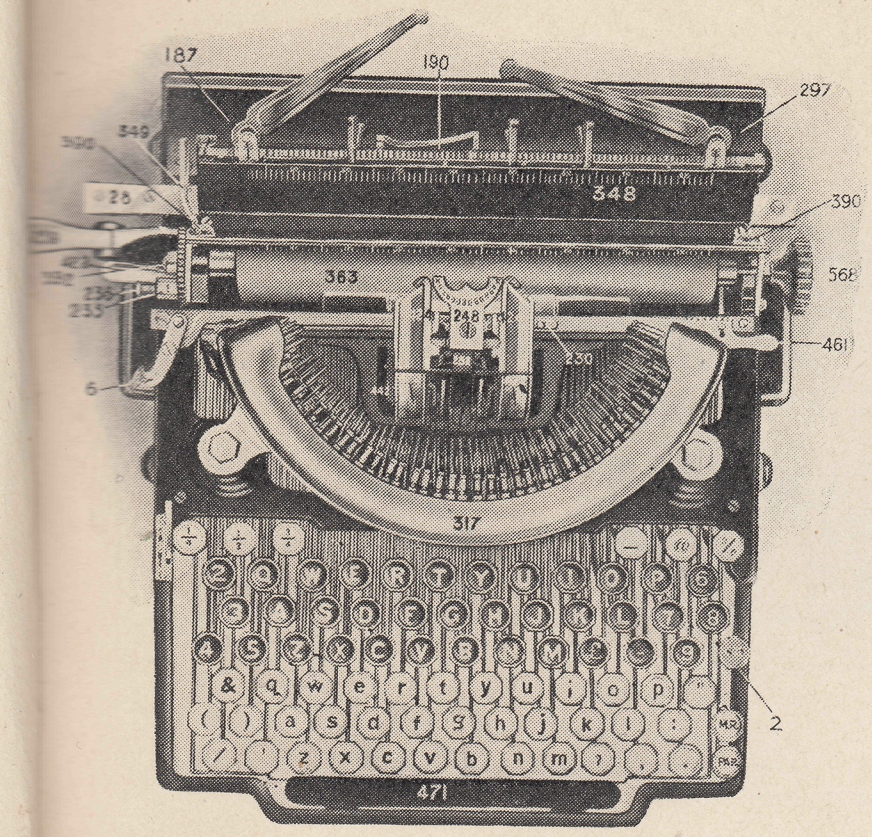
QQ.	NO. 20, TOP FRONT VIEW	xxix
RR.	NO. 20, TOP CARRIAGE VIEW	xxix
SS.	NO. 15, TOP FRONT VIEW	xxxi
TT.	NO. 15, CARRIAGE FRONT VIEW	xxxi

LIST OF DIAGRAMS

DIAGRAM		PAGE
A.	RUBBER FOOT (REMINGTON)	4
B.	INSERTION OF PAPER (BARLOCK)	14
C.	PAPER-GUIDES (ROYAL)	17
D.	PRINTING POINT (YOST)	22
E.	RIGHT-HAND MARGINAL STOP (BARLOCK)	23
F.	RIGHT-HAND MARGINAL STOPS (EMPIRE)	23
G.	CARRIAGE RELEASE (BARLOCK)	34
H.	RETURNING THE CARRIAGE (BARLOCK)	36
I.	RIBBON BOX (OLIVER)	47
J.	DIRECTION OF RIBBON MOVEMENT (ROYAL)	48
K.	PUTTING ON A RIBBON (BARLOCK)	50
L.	RIBBON PUSH BUTTONS (OLIVER)	52
M.	PUTTING ON A RIBBON (OLIVER)	52
N.	PUTTING ON A TWO-COLOUR RIBBON (OLIVER)	53
O.	PUTTING ON A RIBBON (SMITH PREMIER)	55
P.	PUTTING ON A RIBBON (UNDERWOOD)	56
Q.	FINGER-KEY TENSION (ROYAL)	57
R.	CARRIAGE TENSION (YOST)	58
S.	TABULATOR RACK AND STOP (OLIVER)	64
T.	COLUMN SELECTOR MECHANISM (REMINGTON)	65
U.	TABULATOR MECHANISM (REMINGTON)	67
V.	TABULATOR SCALES (REMINGTON)	68
W.	REMOVING THE CARRIAGE (YOST)	73
X.	CARRIAGE LOCK BUTTONS (YOST)	73
Y.	REPLACING THE CARRIAGE (YOST)	74
Z.	CENTRING SCALE (UNDERWOOD)	76
AA., *BB.*	SPEED ESCAPEMENT (MONARCH)	77

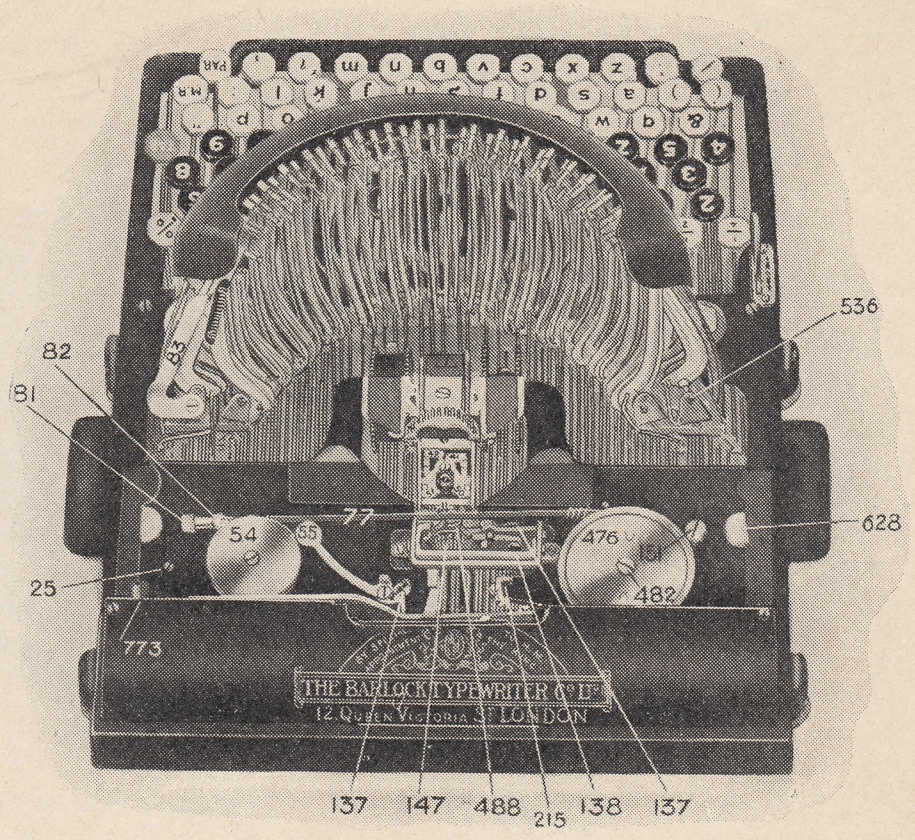
BARLOCK

Plate A



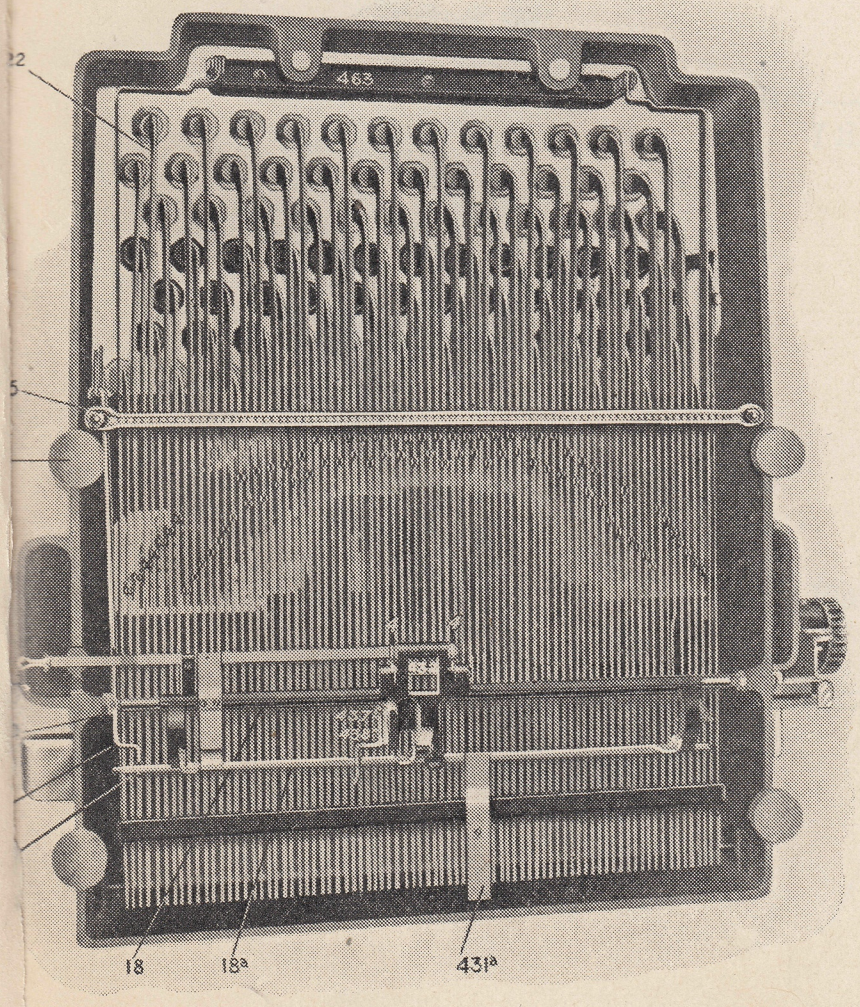
FRONT TOP VIEW

Plate B



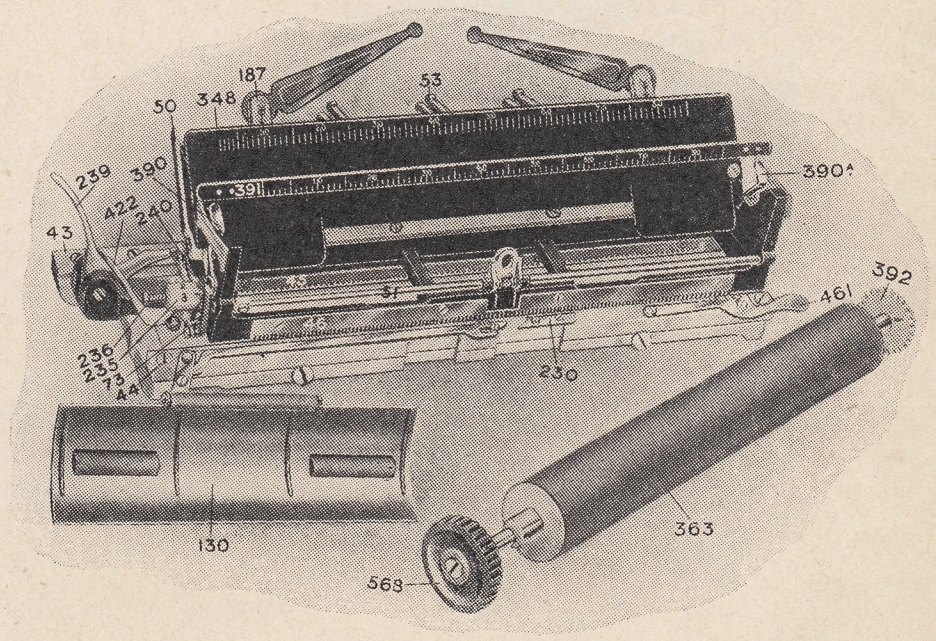
BACK TOP VIEW

Plate C



BOTTOM VIEW

Plate D

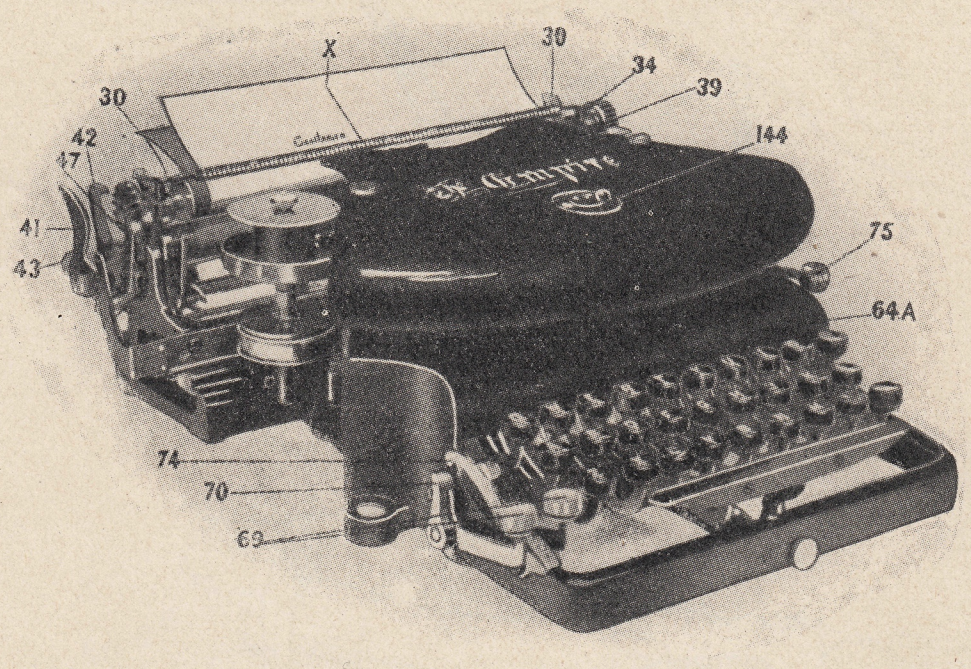


PAPER CARRIAGE

EMPIRE

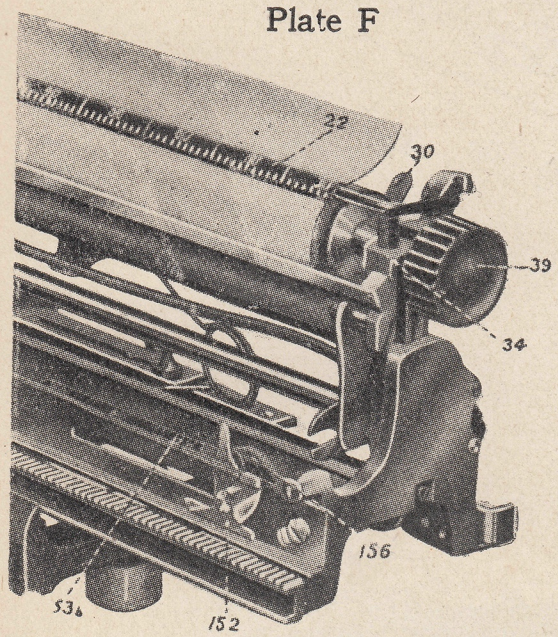
No. 1 MACHINE

Plate E



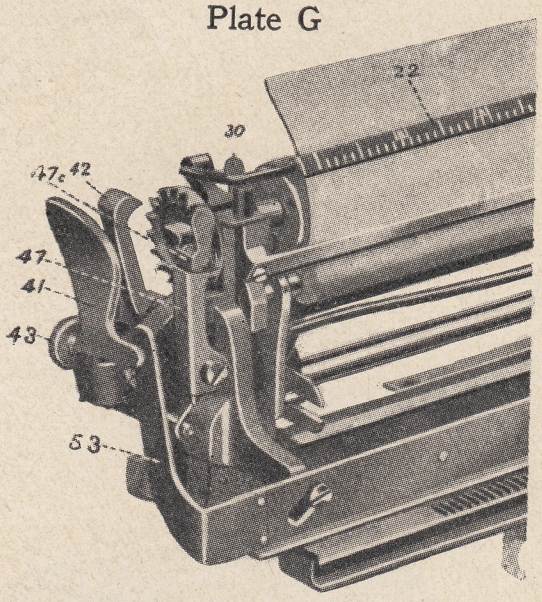
FRONT VIEW OF MACHINE

Plate F



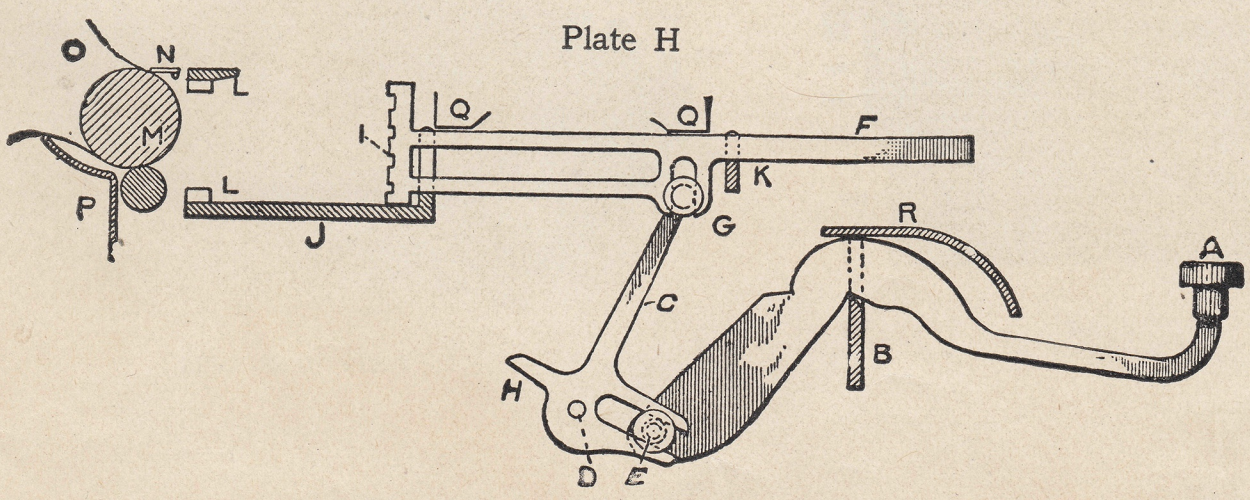
CARRIAGE : RIGHT-HAND END

Plate G



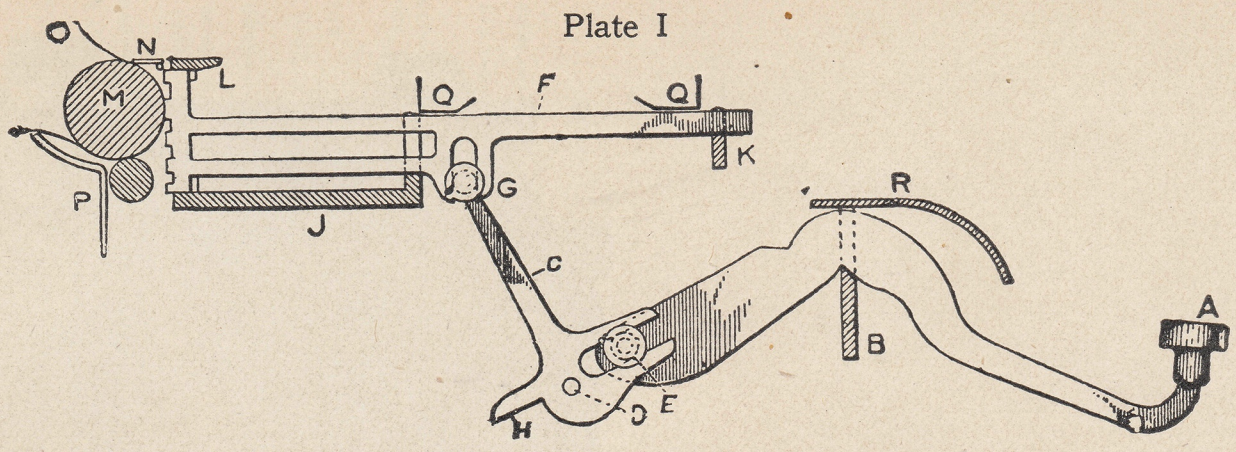
CARRIAGE : LEFT-HAND END

Plate H



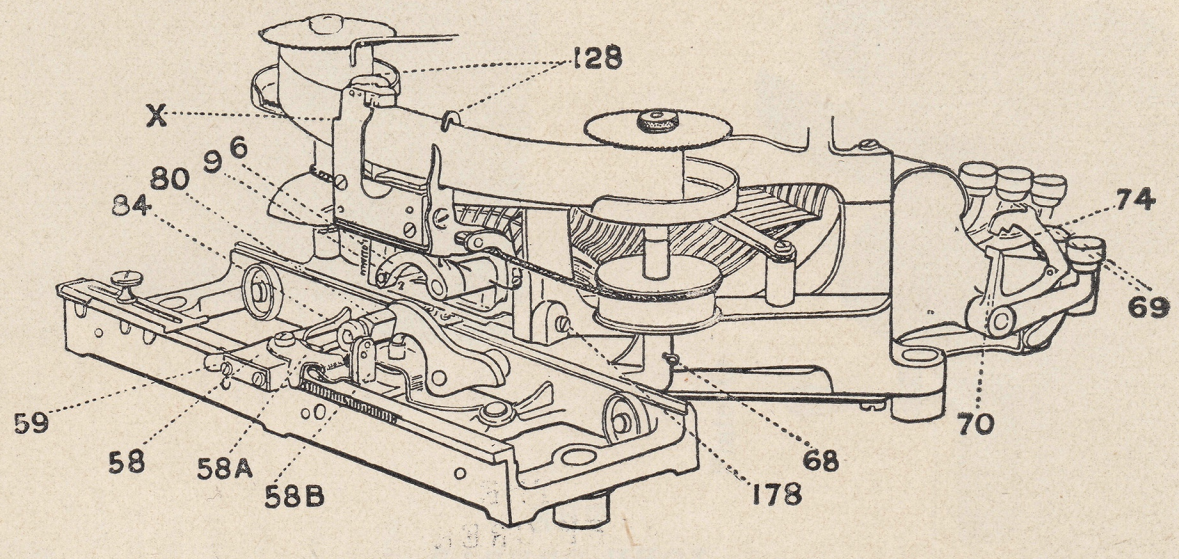
SECTIONAL VIEW OF TYPE ACTION

Plate I



SECTIONAL VIEW OF TYPE ACTION

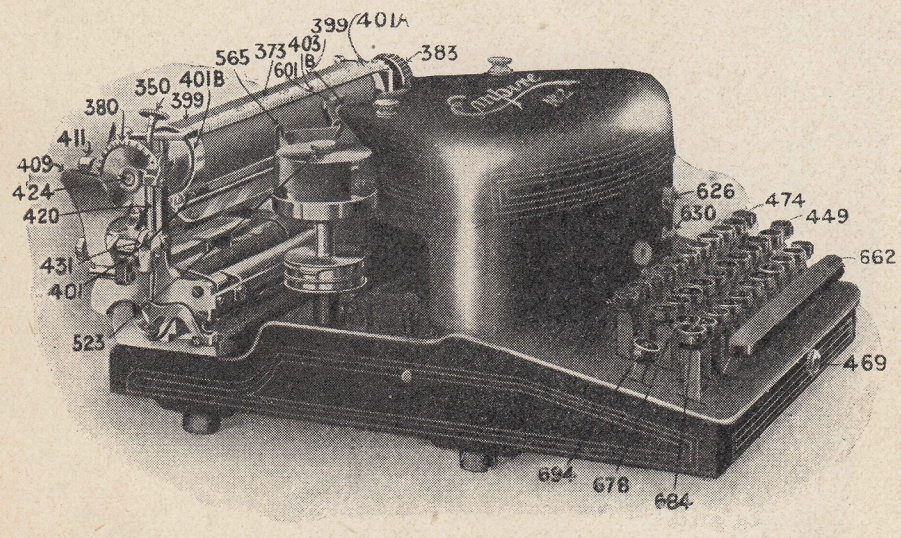
Plate J



DETAIL OF CARRIAGE ACTION

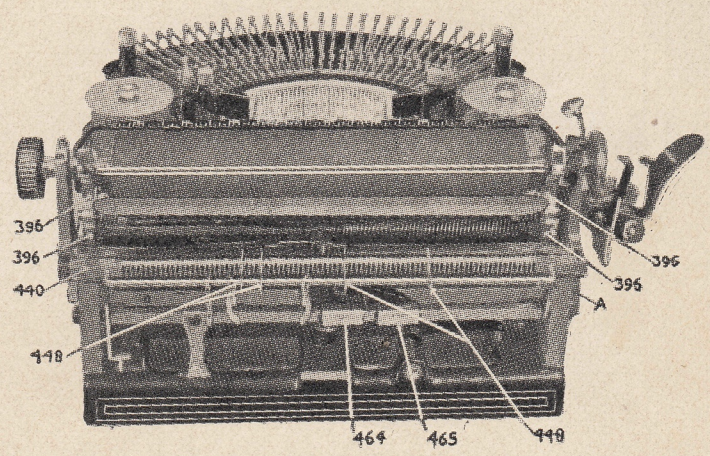
No. 2 MACHINE

Plate K



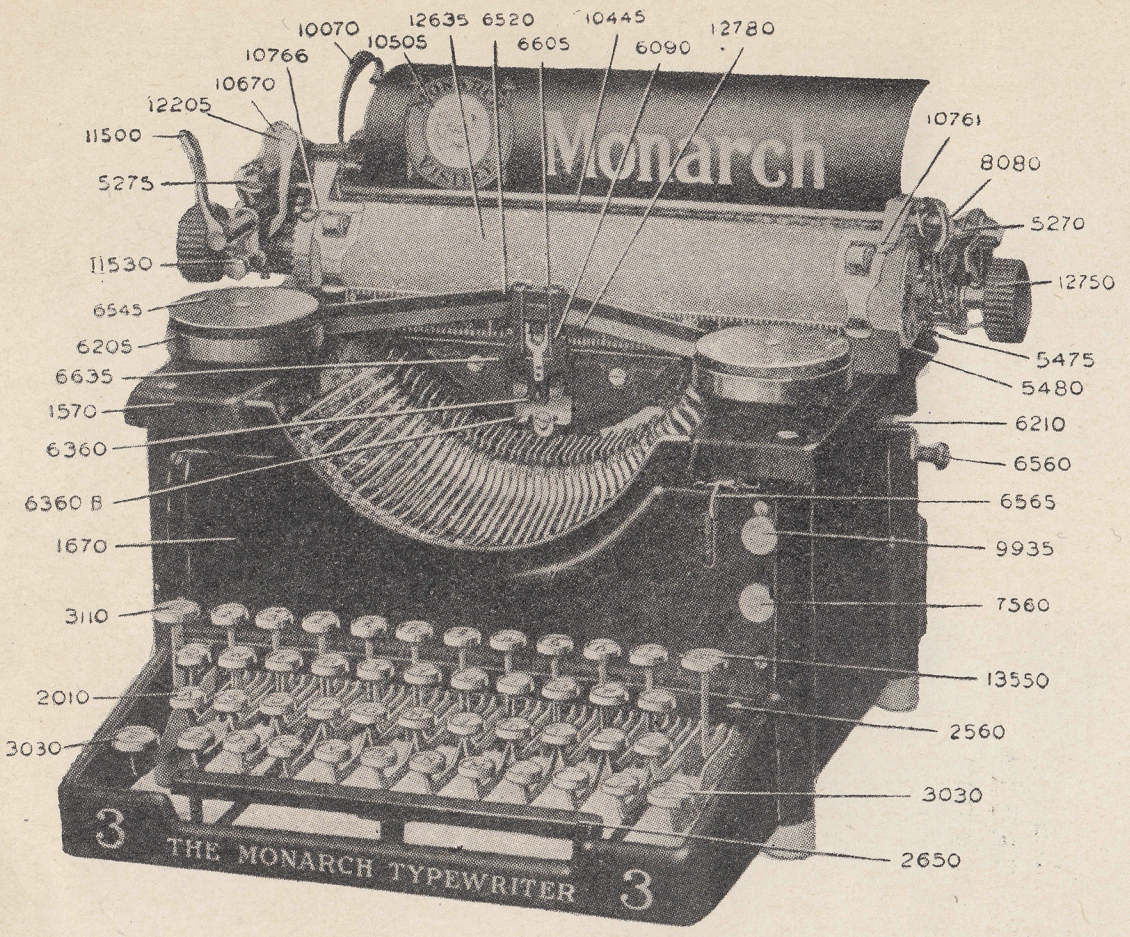
LEFT SIDE VIEW

Plate L



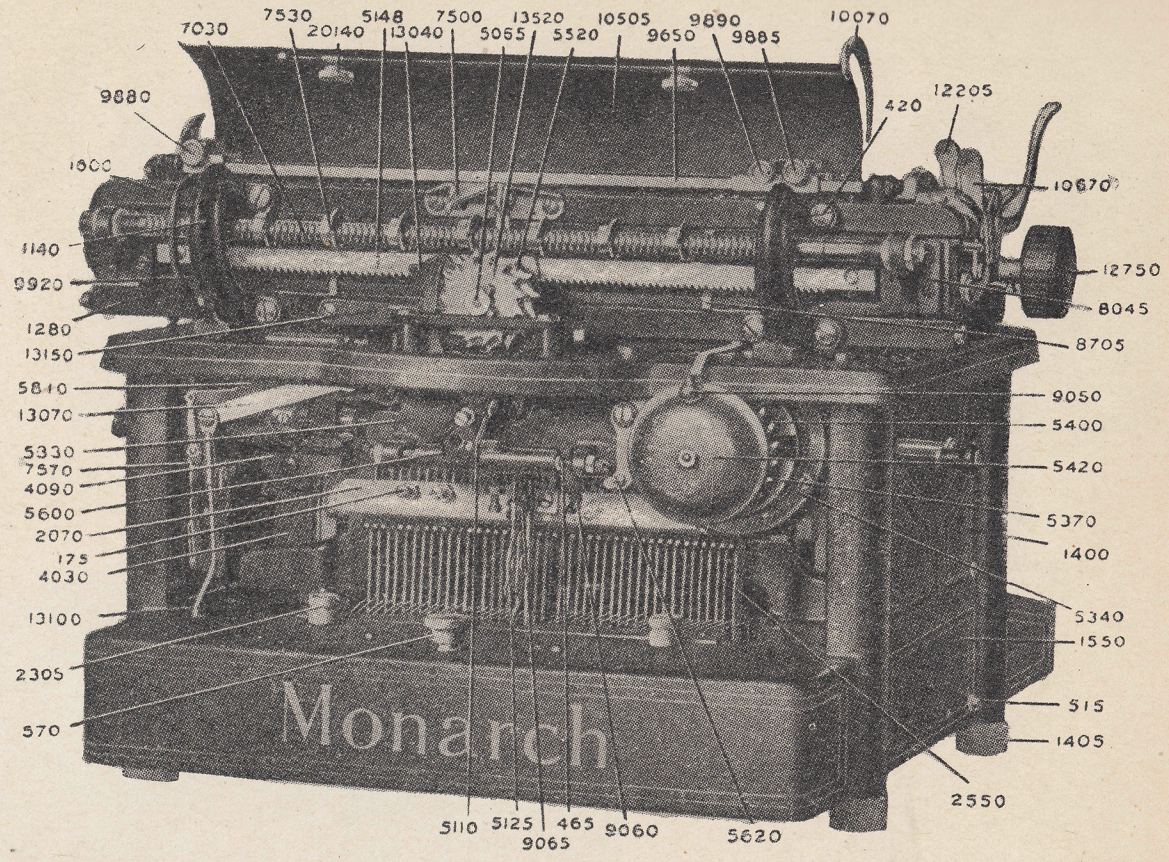
BACK VIEW

Plate M



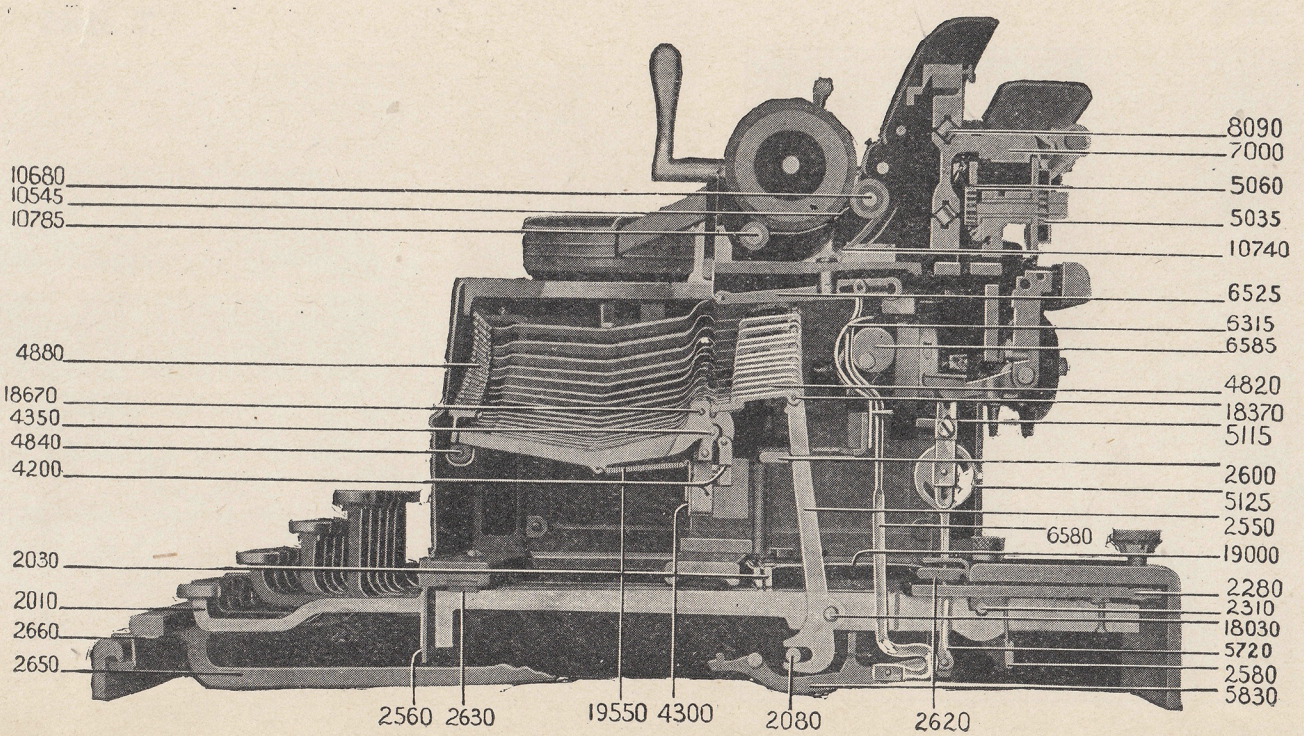
FRONT VIEW

Plate N



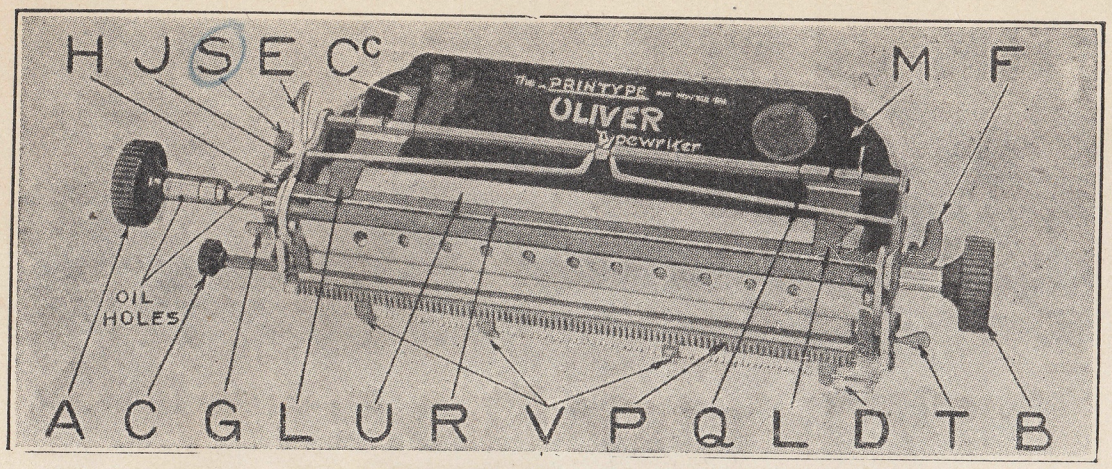
BACK VIEW

Plate O



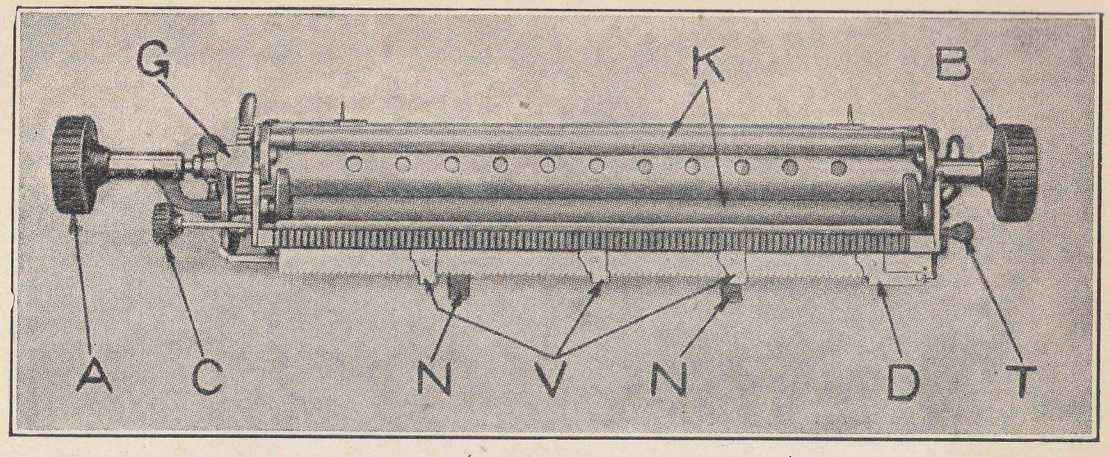
SECTIONAL VIEW

Plate P



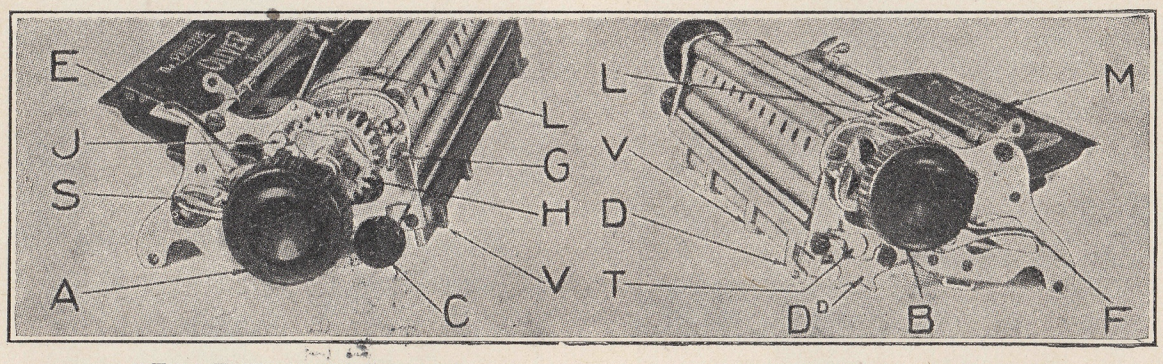
CARRIAGE (FRONT VIEW)

Plate Q



CARRIAGE (VIEW OF UNDER-SIDE)

Plate R

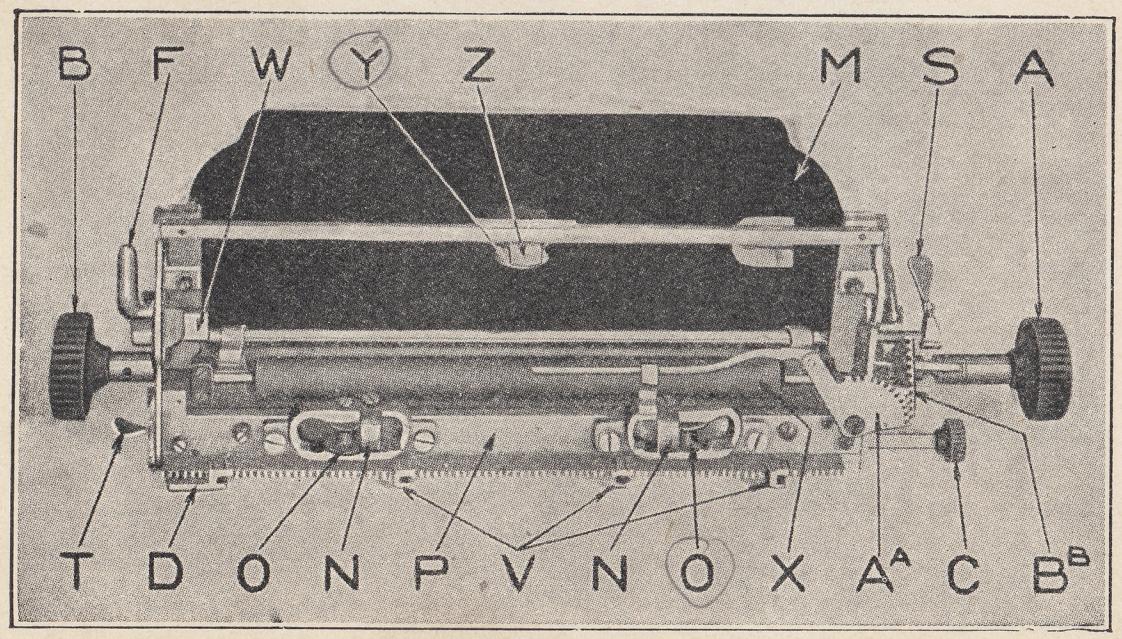


LEFT END OF CARRIAGE

Plate S

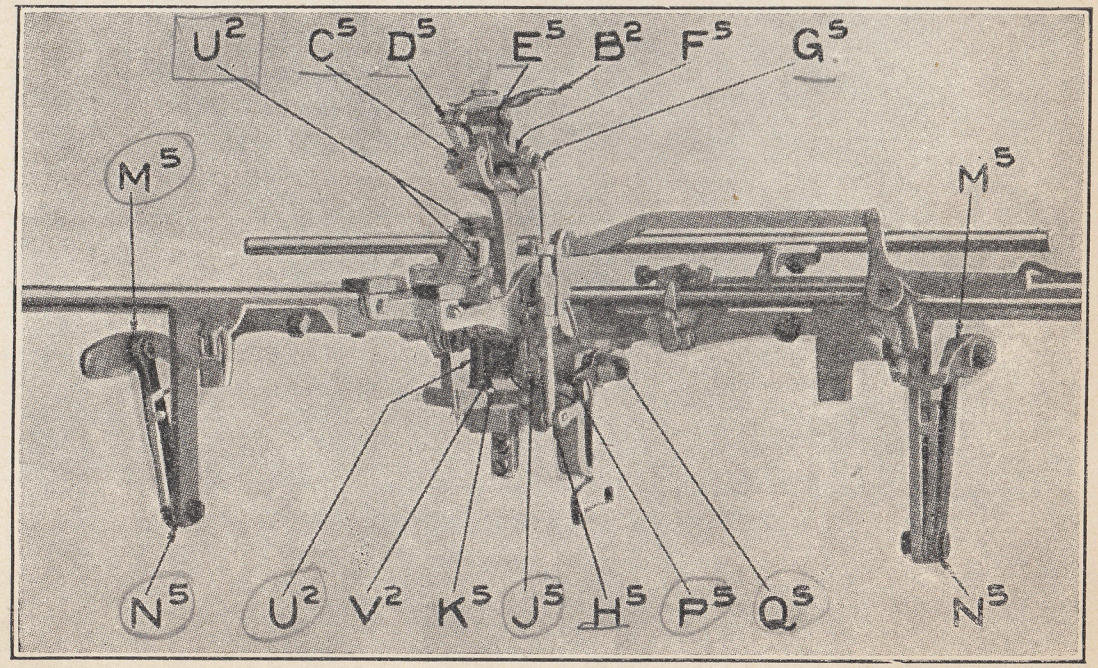
RIGHT END OF CARRIAGE

Plate T



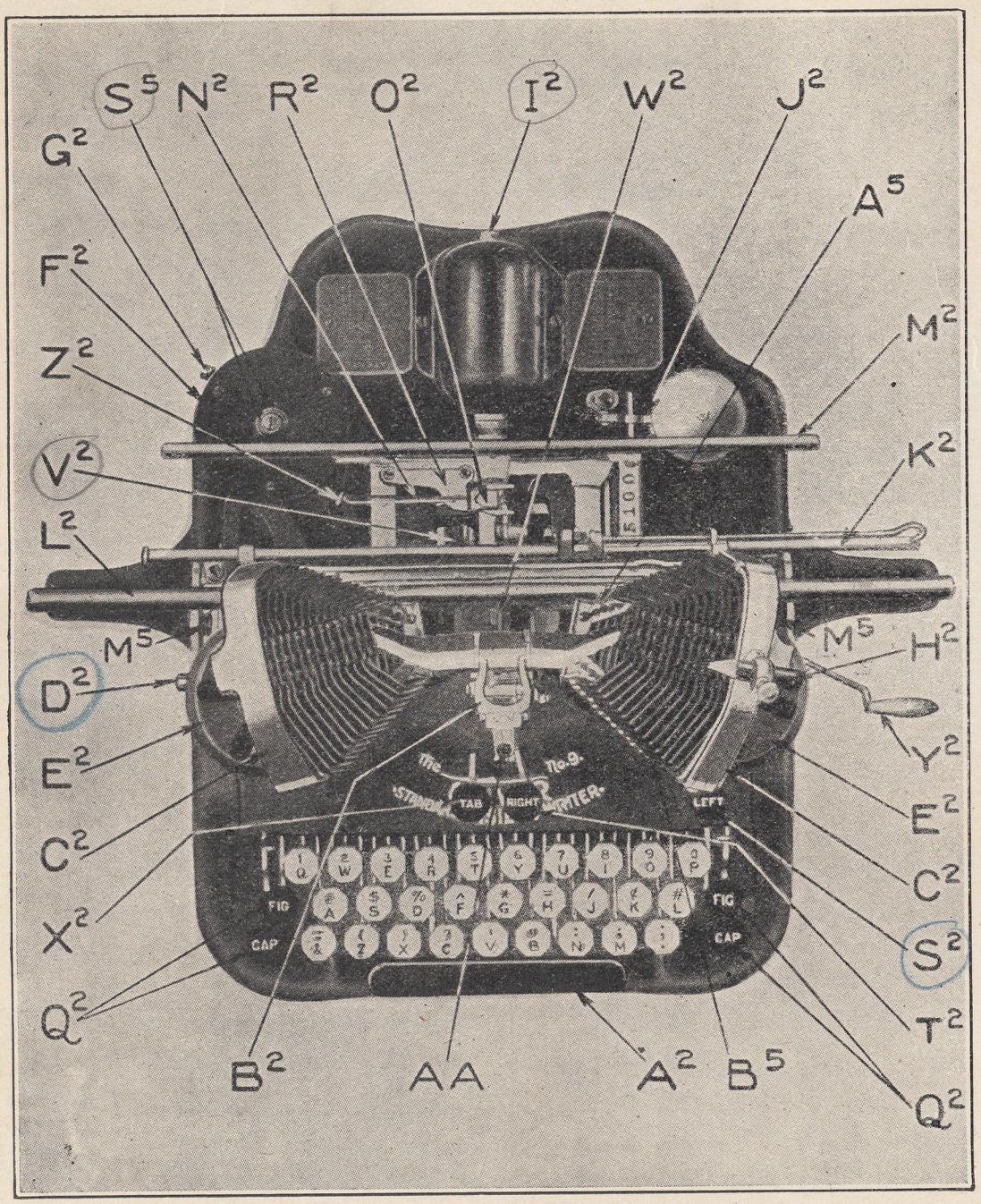
CARRIAGE (BACK VIEW)

Plate U



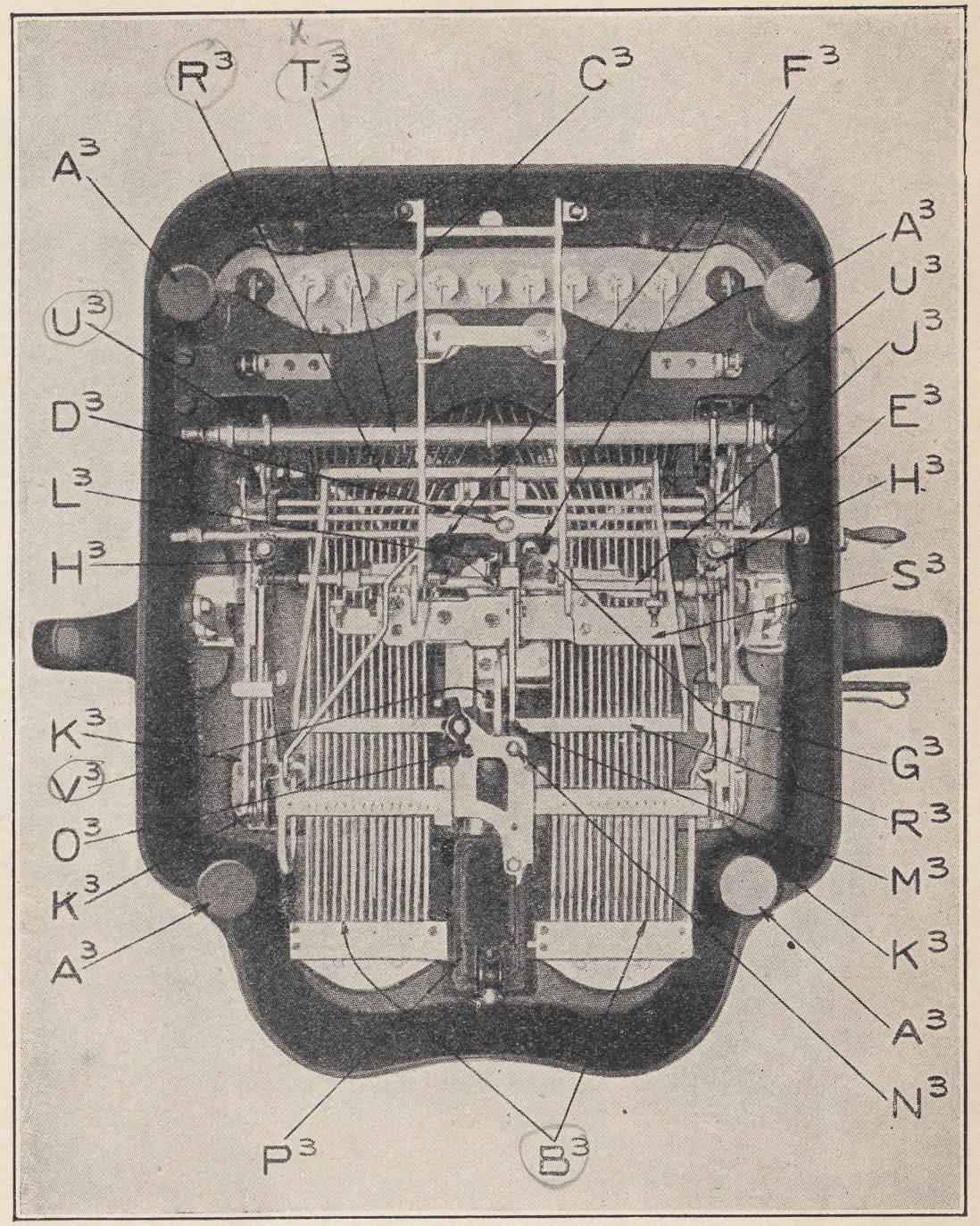
ESCAPEMENT

Plate V



TOP VIEW OF MACHINE WITH CARRIAGE REMOVED

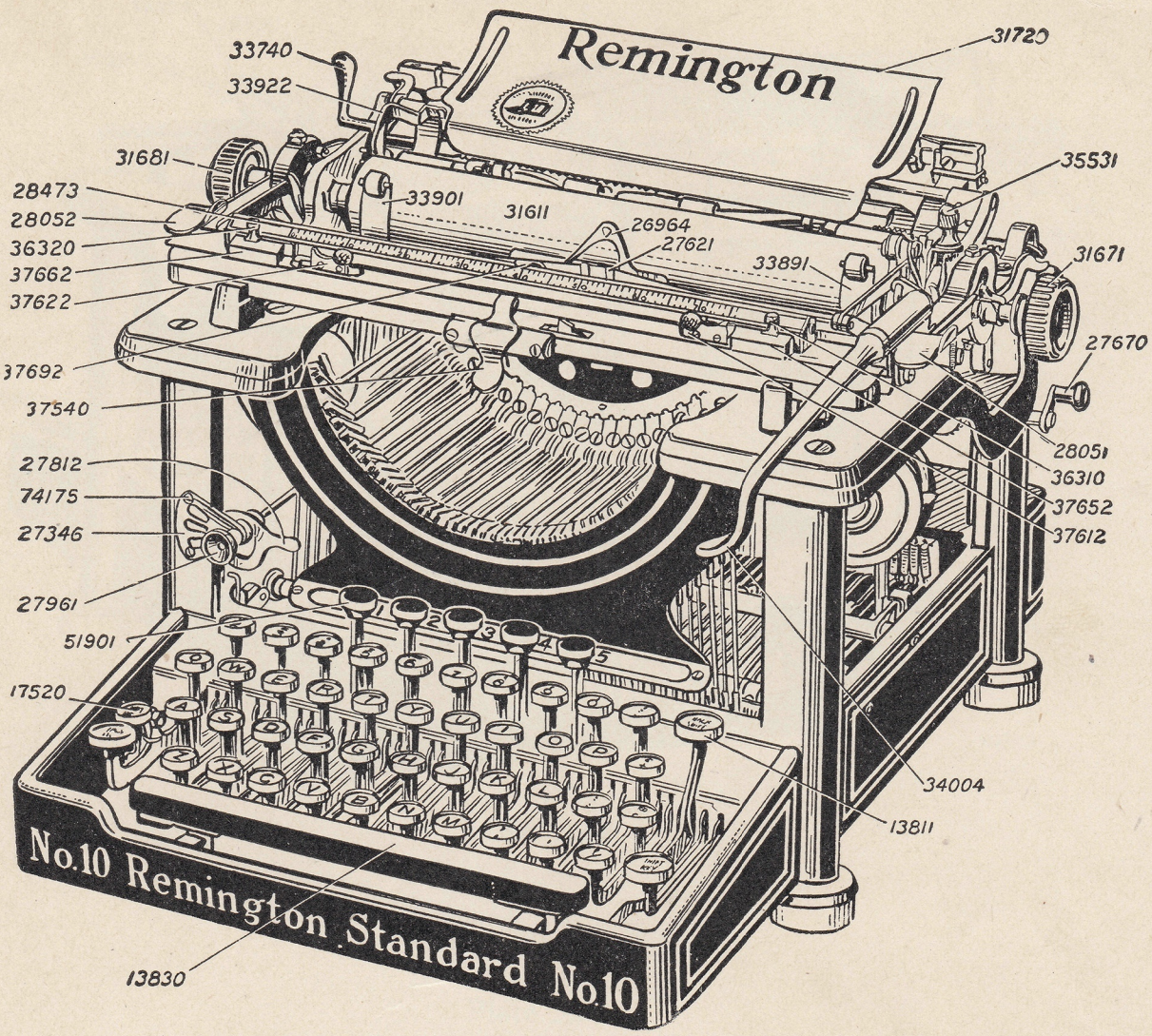
Plate W



UNDER-SIDE OF MACHINE

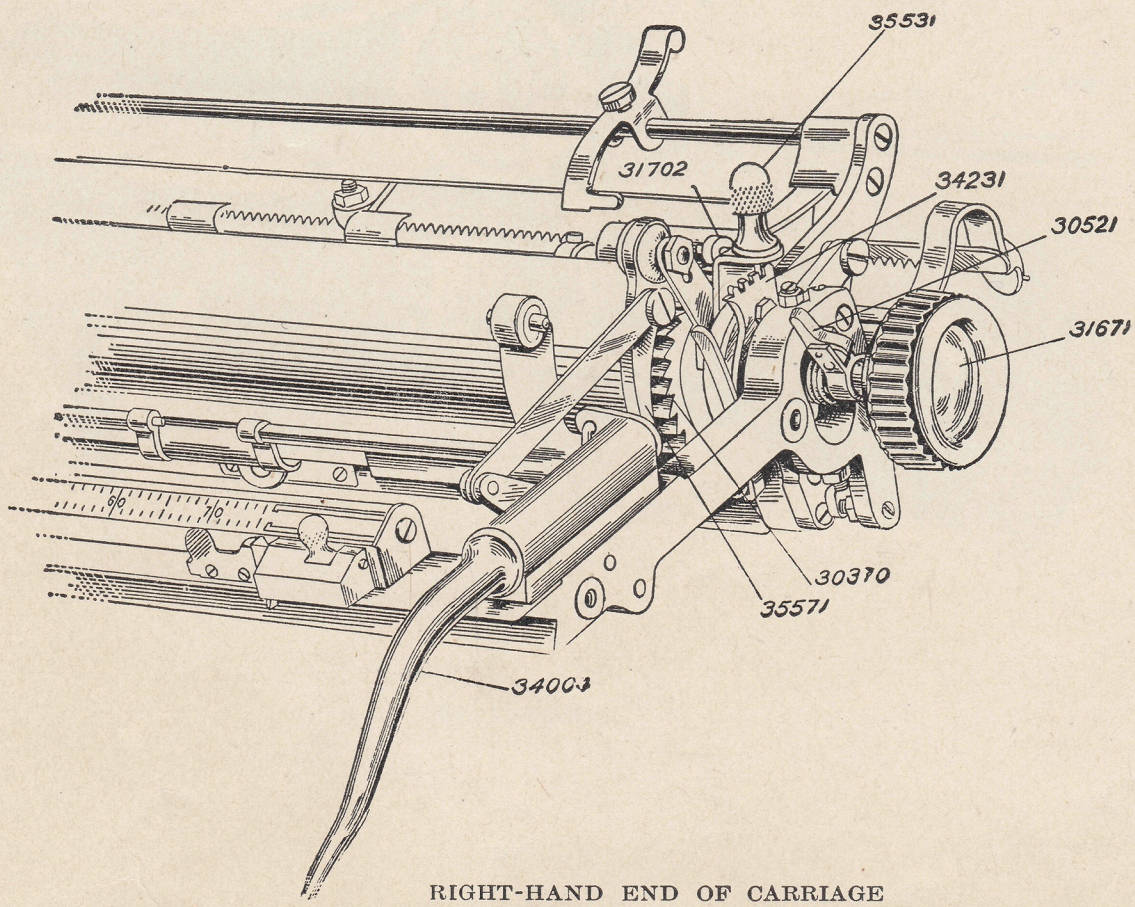
REMINGTON

Plate X



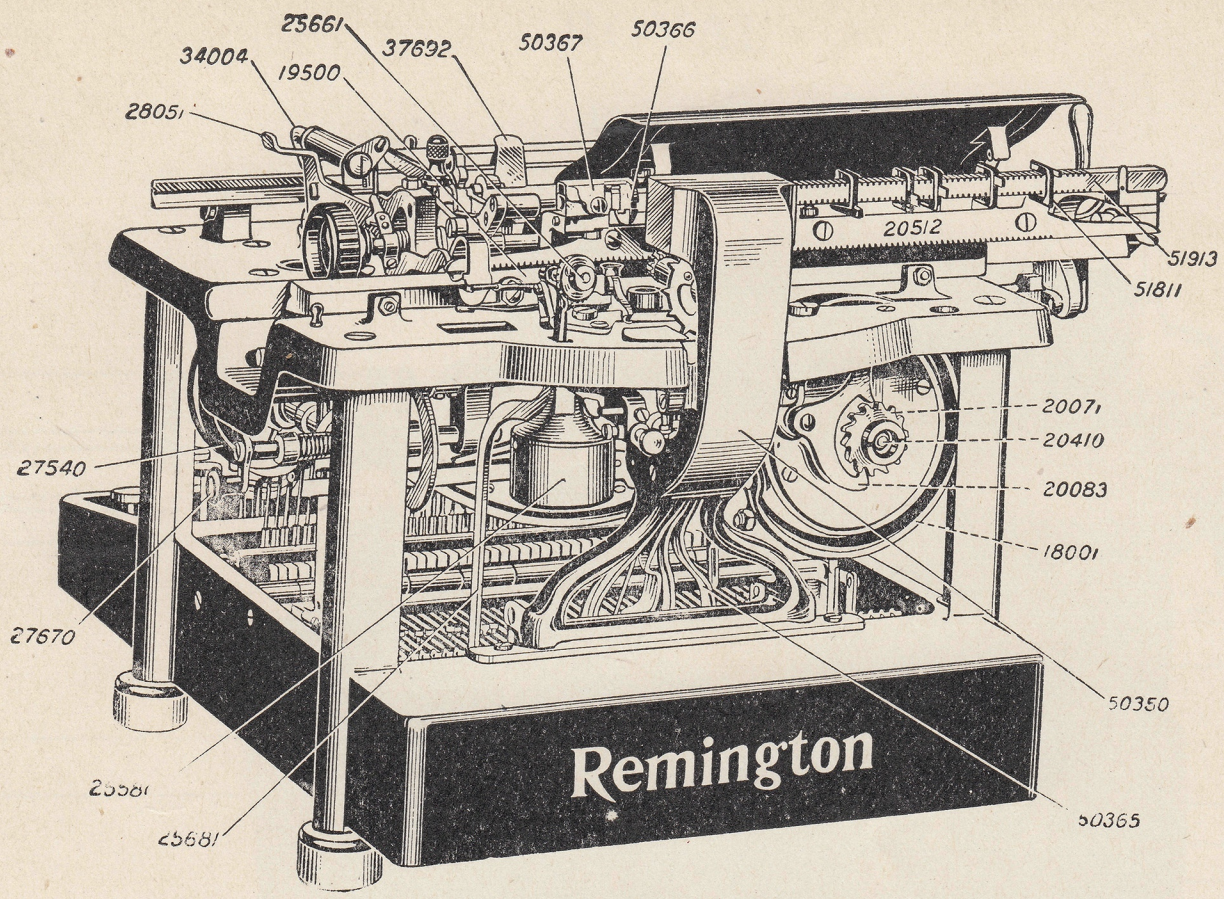
FRONT SIDE VIEW

Plate Y



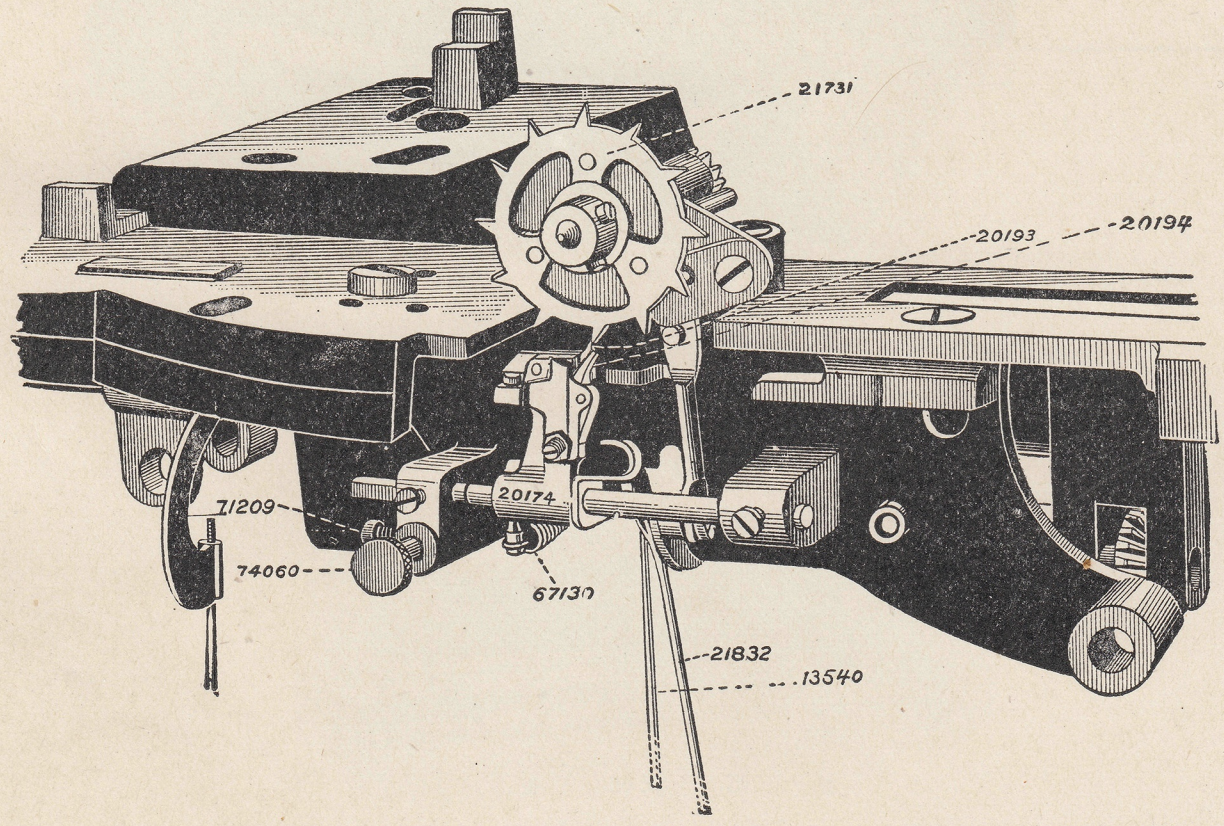
RIGHT-HAND END OF CARRIAGE

Plate Z



BACK VIEW

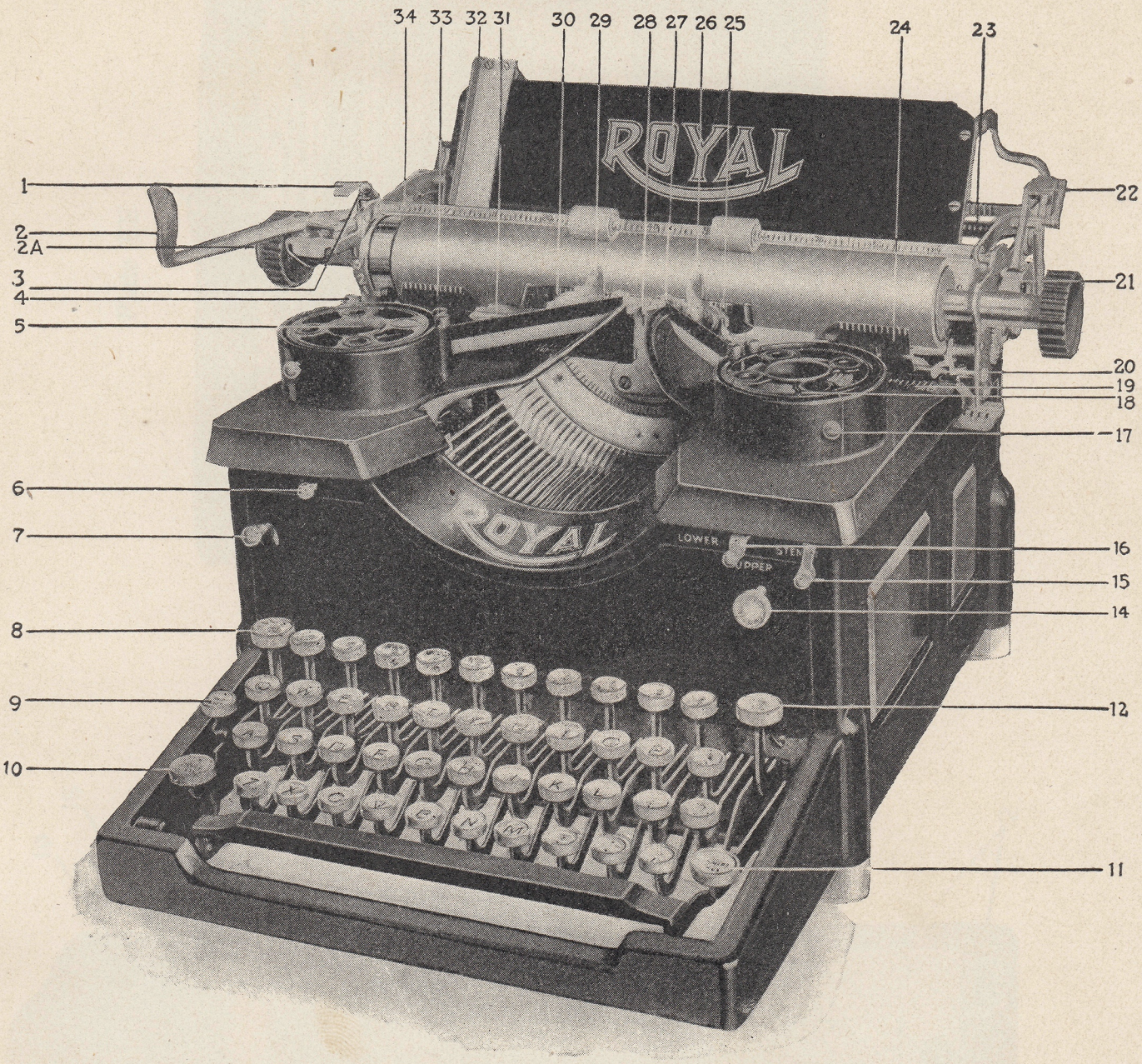
Plate AA



ESCAPEMENT

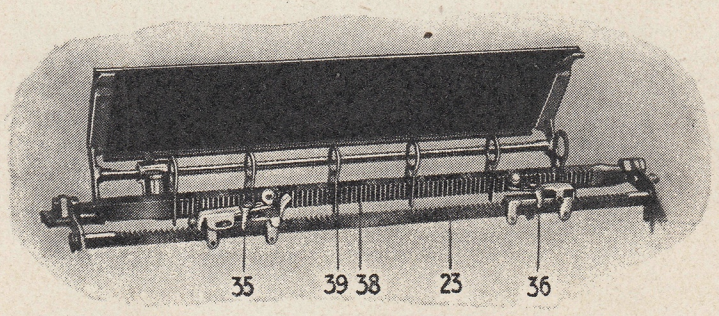
ROYAL

Plate BB



FRONT VIEW

Plate CC



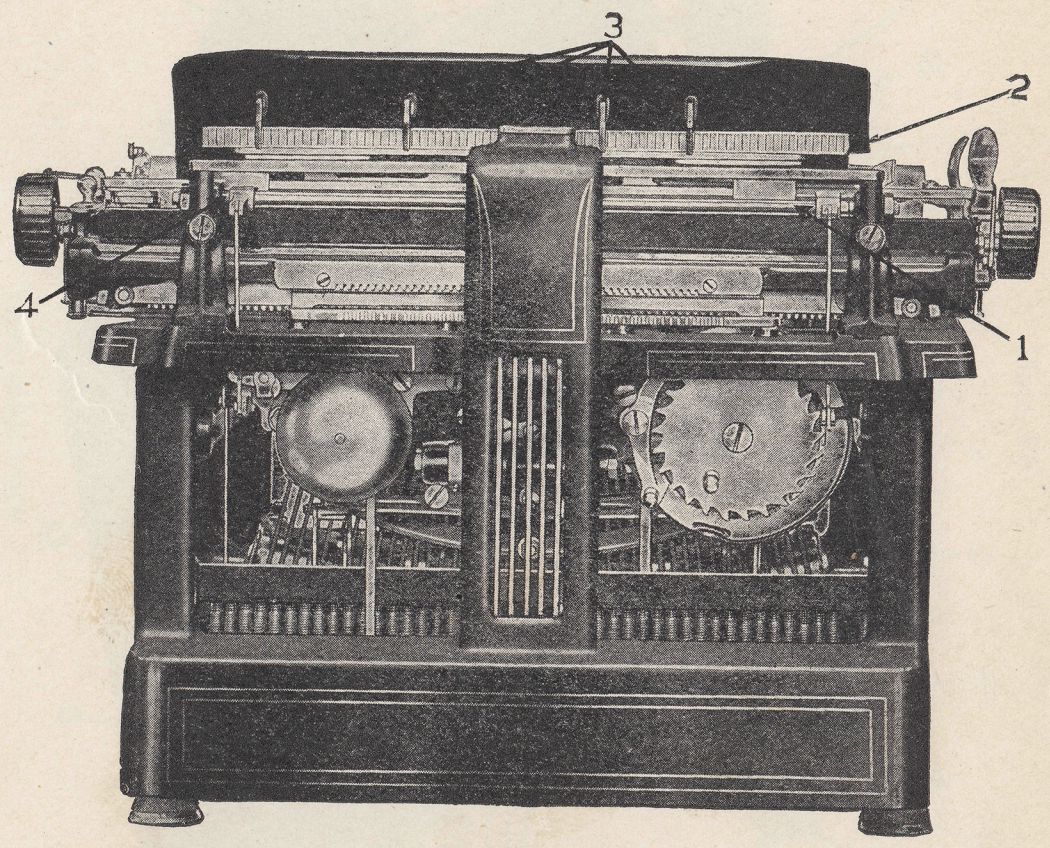
BACK OF CARRIAGE

Plate DD



FRONT VIEW

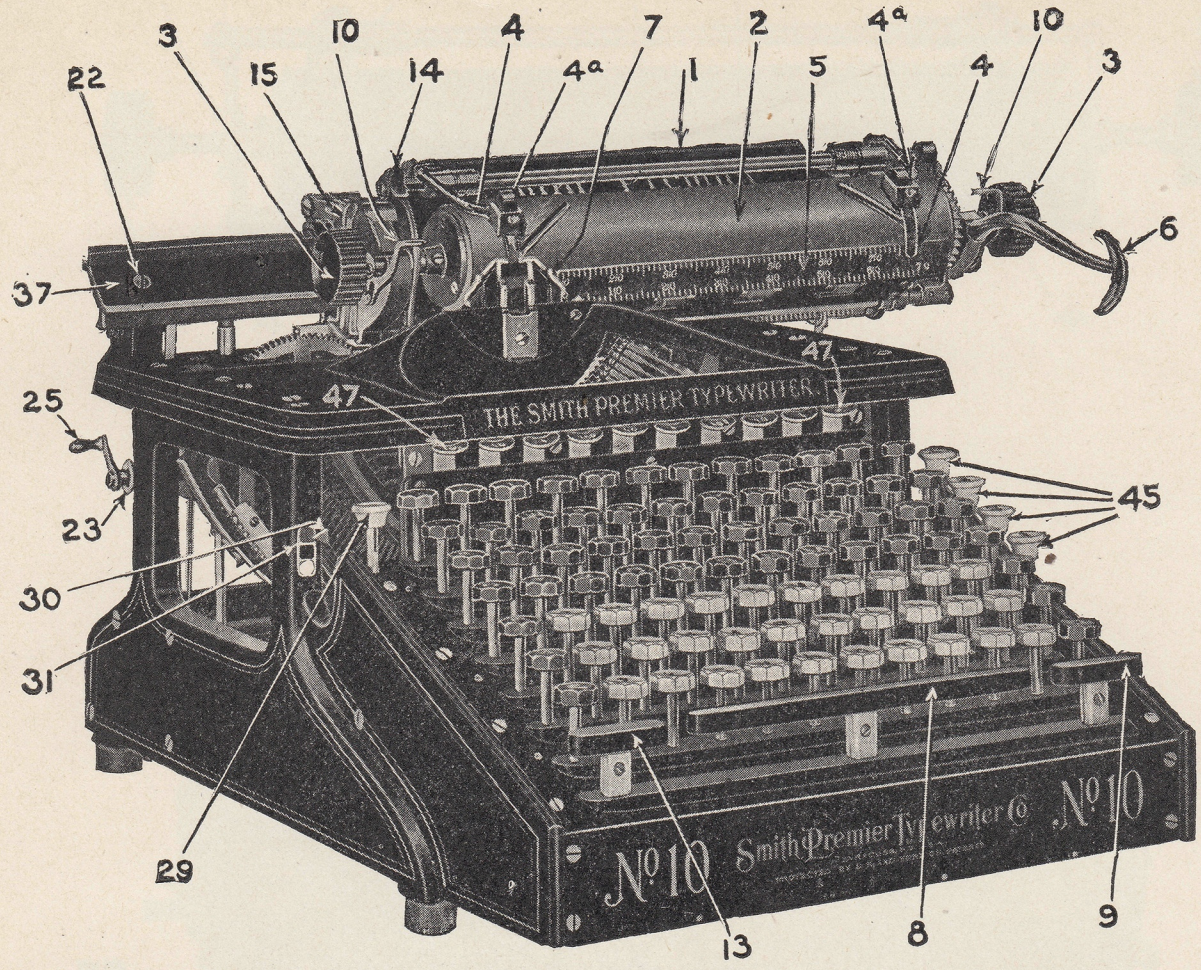
Plate EE



BACK VIEW

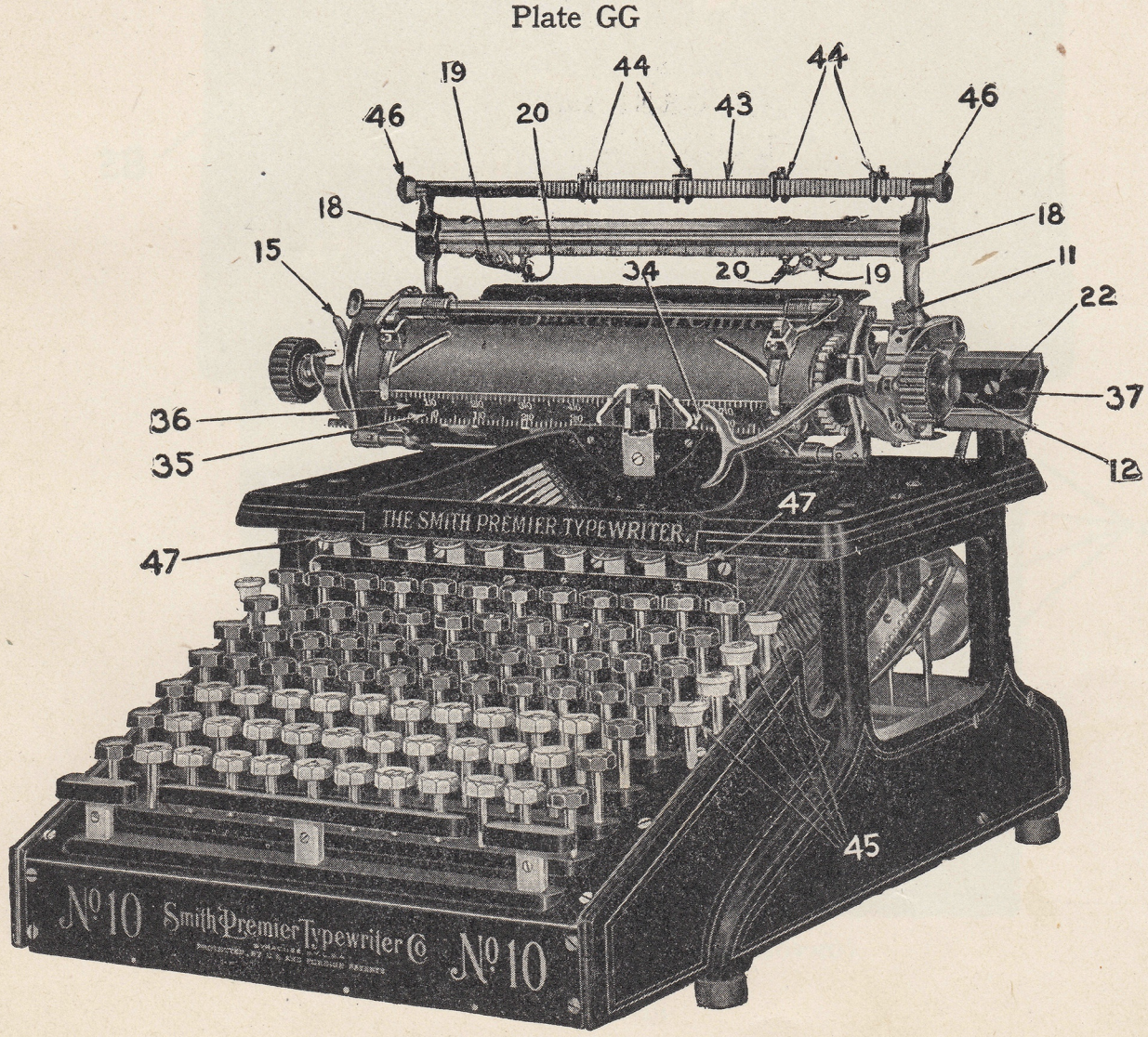
SMITH PREMIER

Plate FF



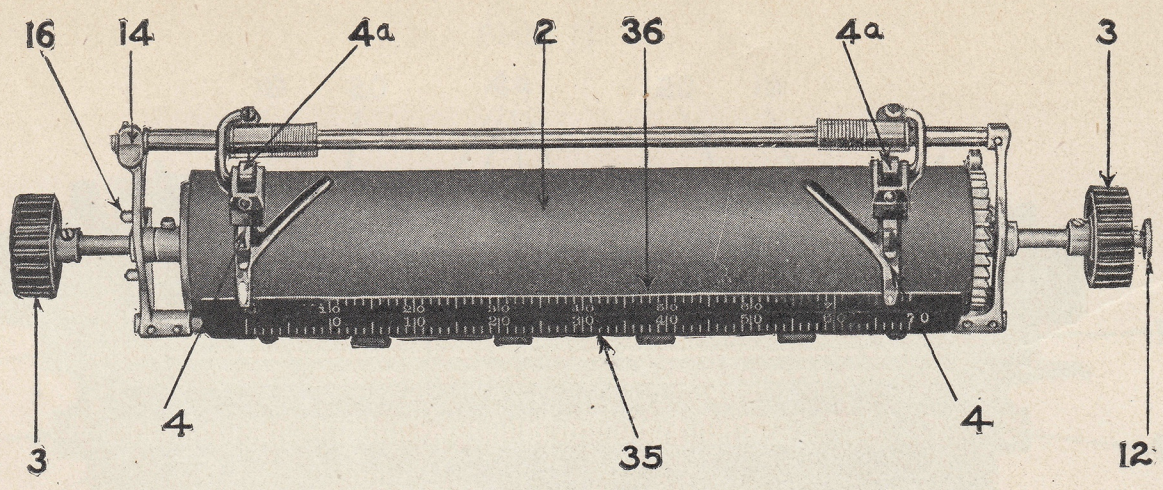
LEFT SIDE VIEW

Plate GG



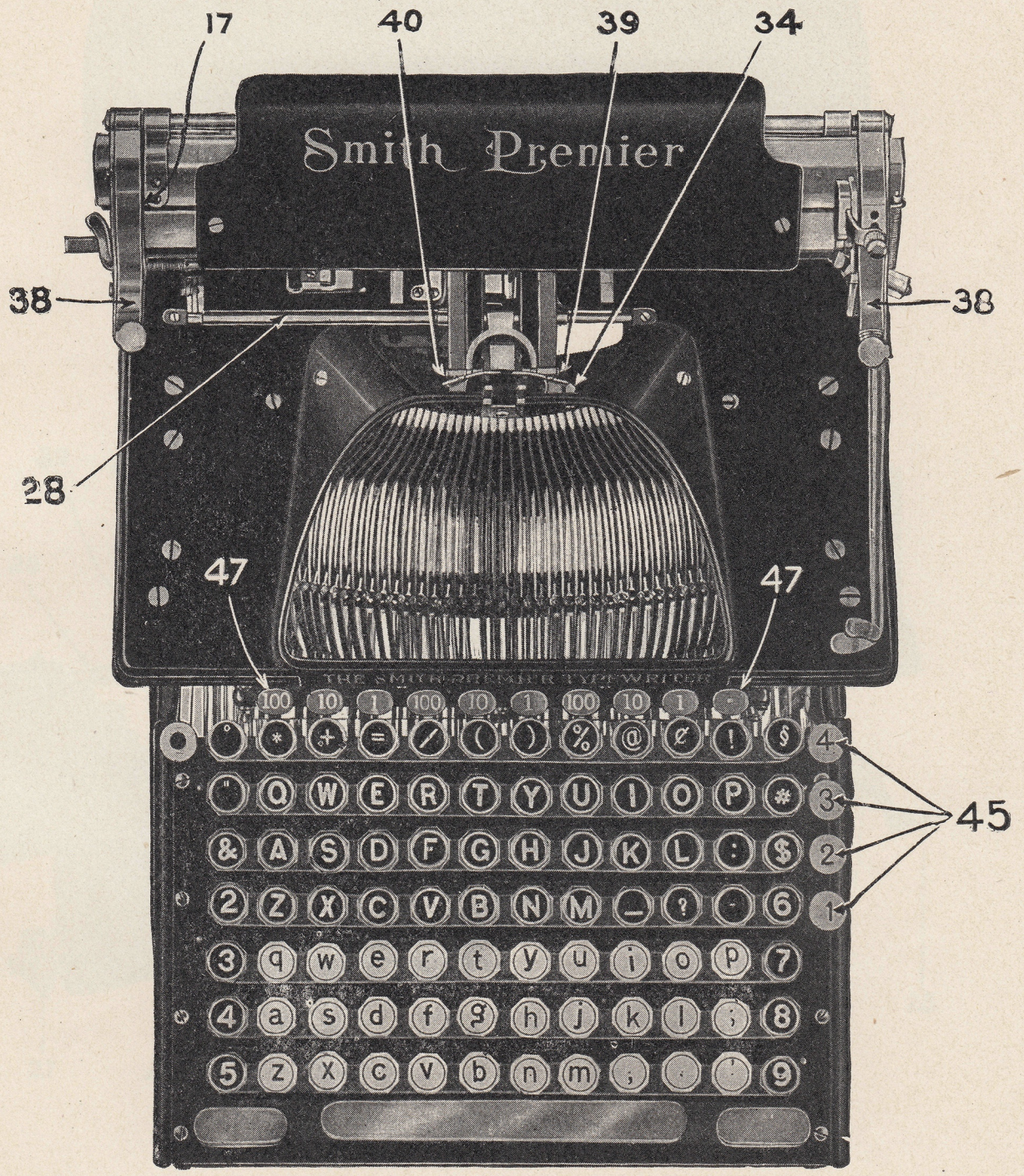
RIGHT SIDE VIEW

Plate HH



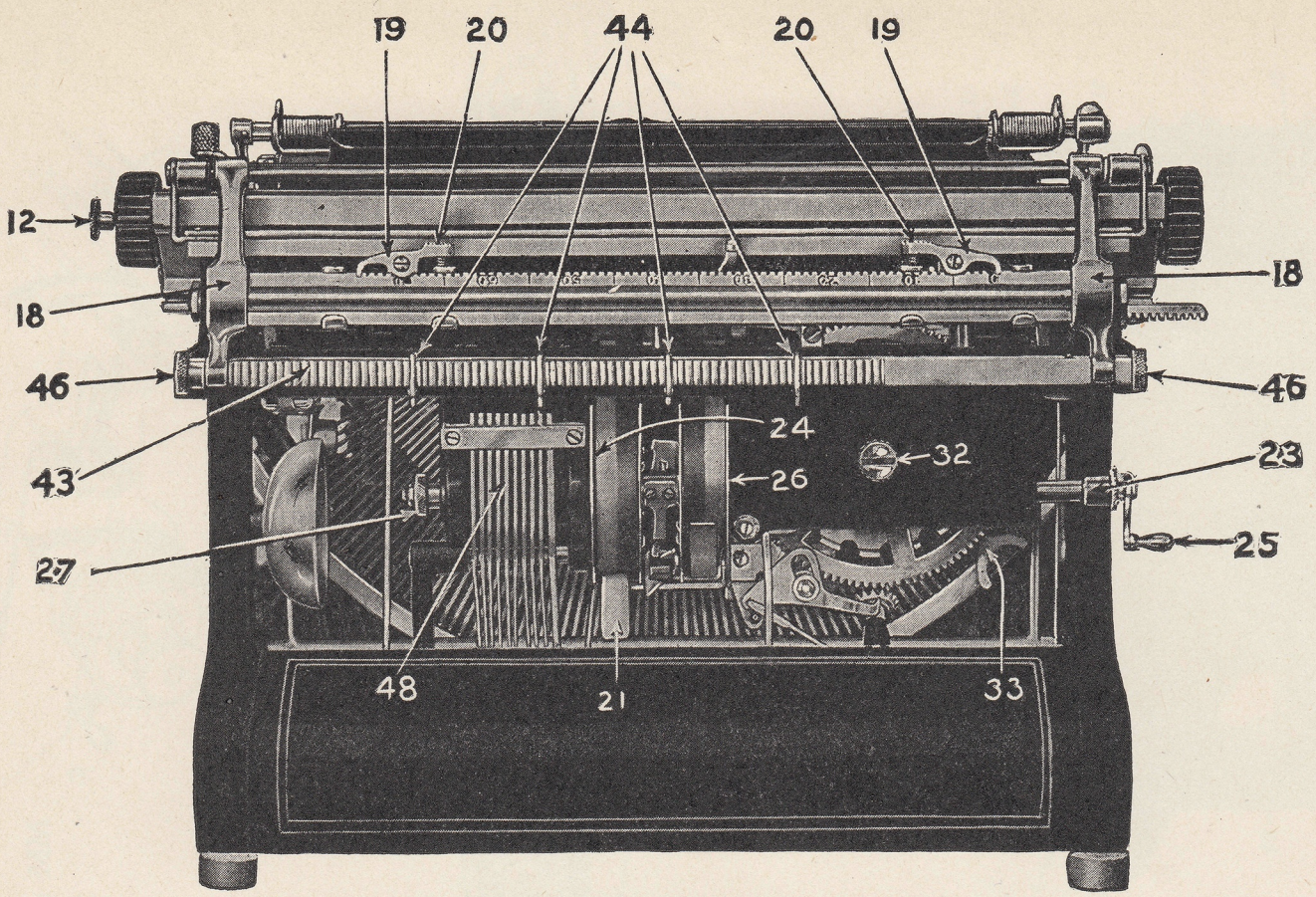
CYLINDER

Plate II



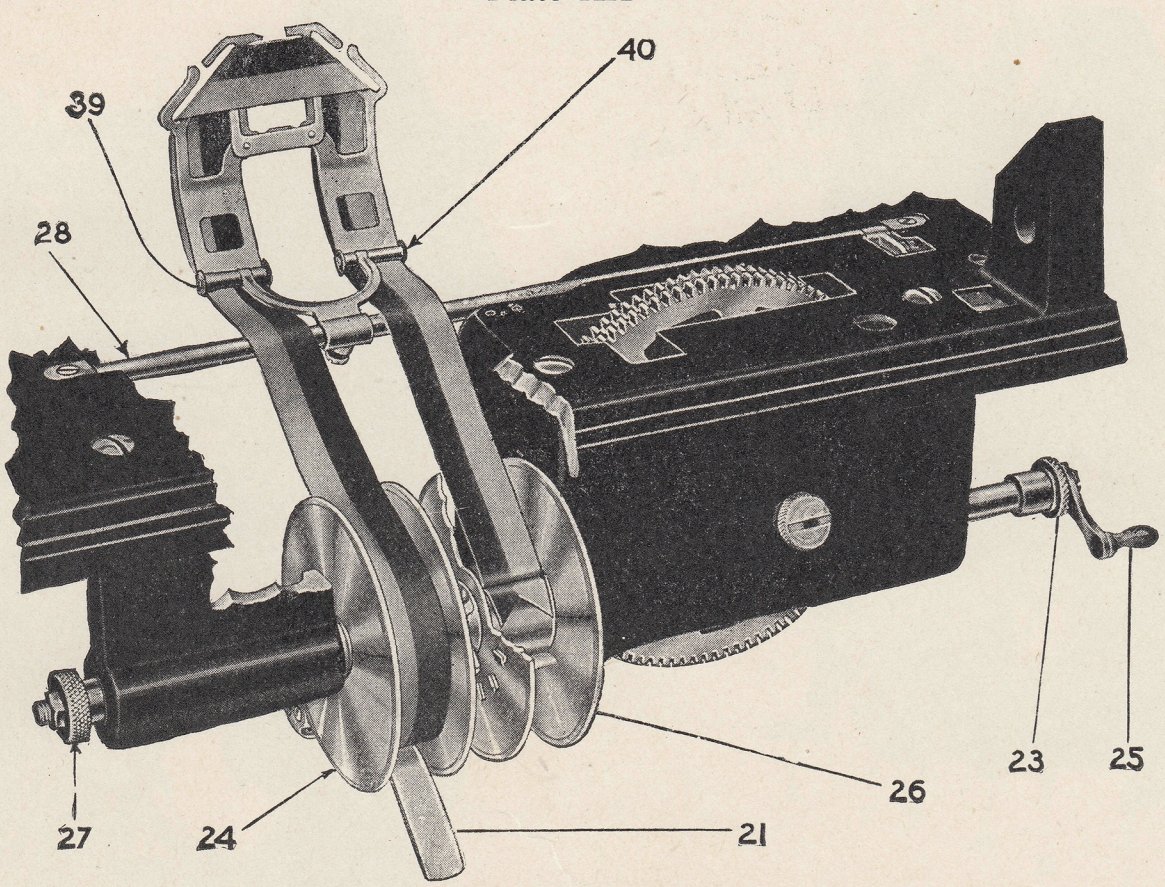
TOP VIEW (CARRIAGE REMOVED)

Plate JJ



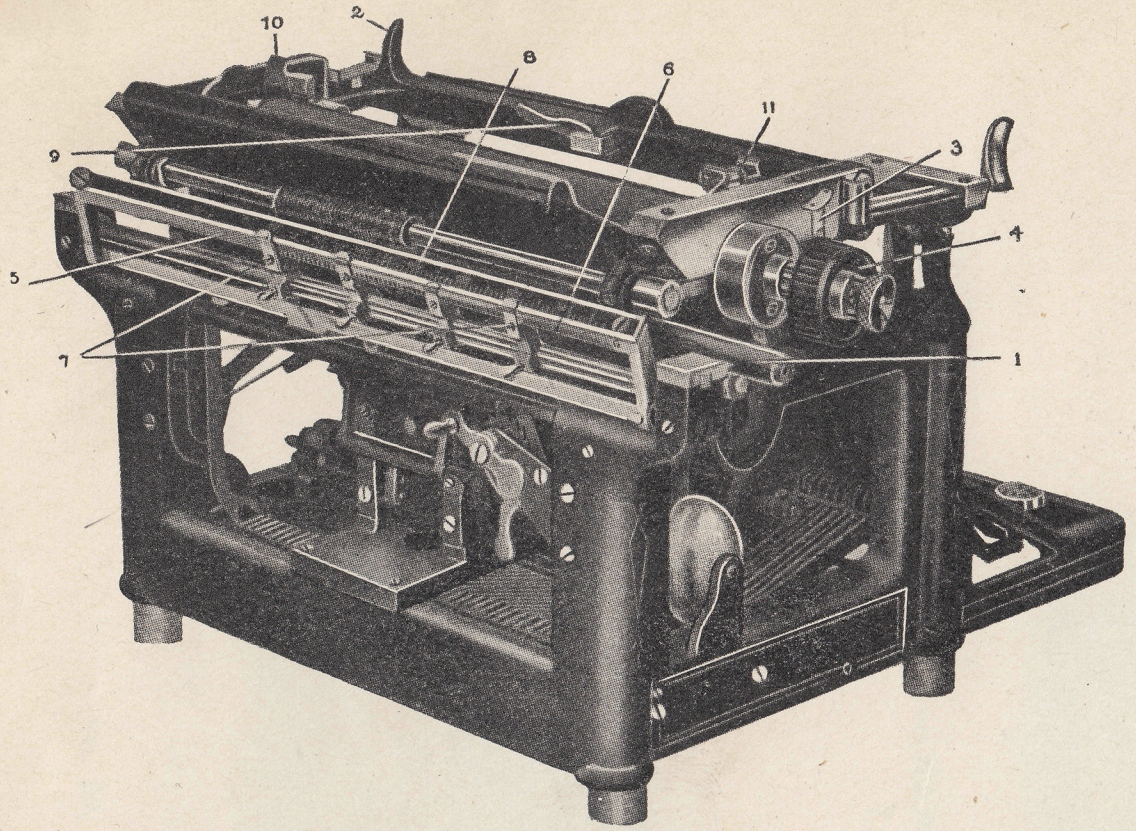
BACK VIEW

Plate KK



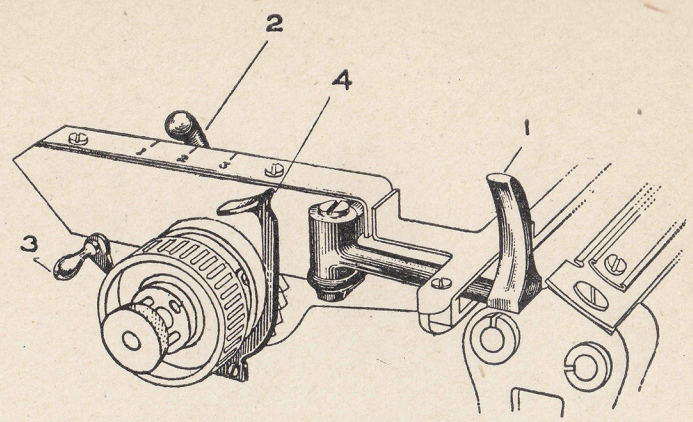
RIBBON MECHANISM

Plate LL



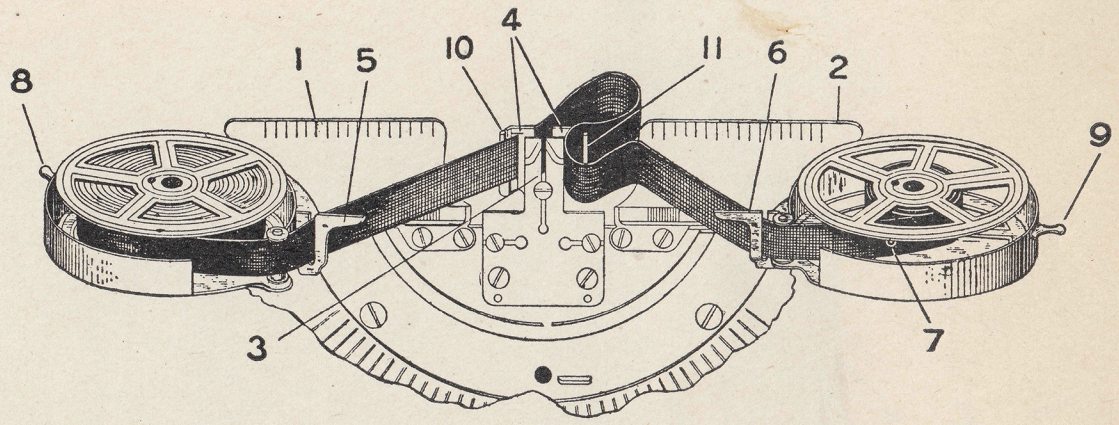
BACK VIEW

Plate MM



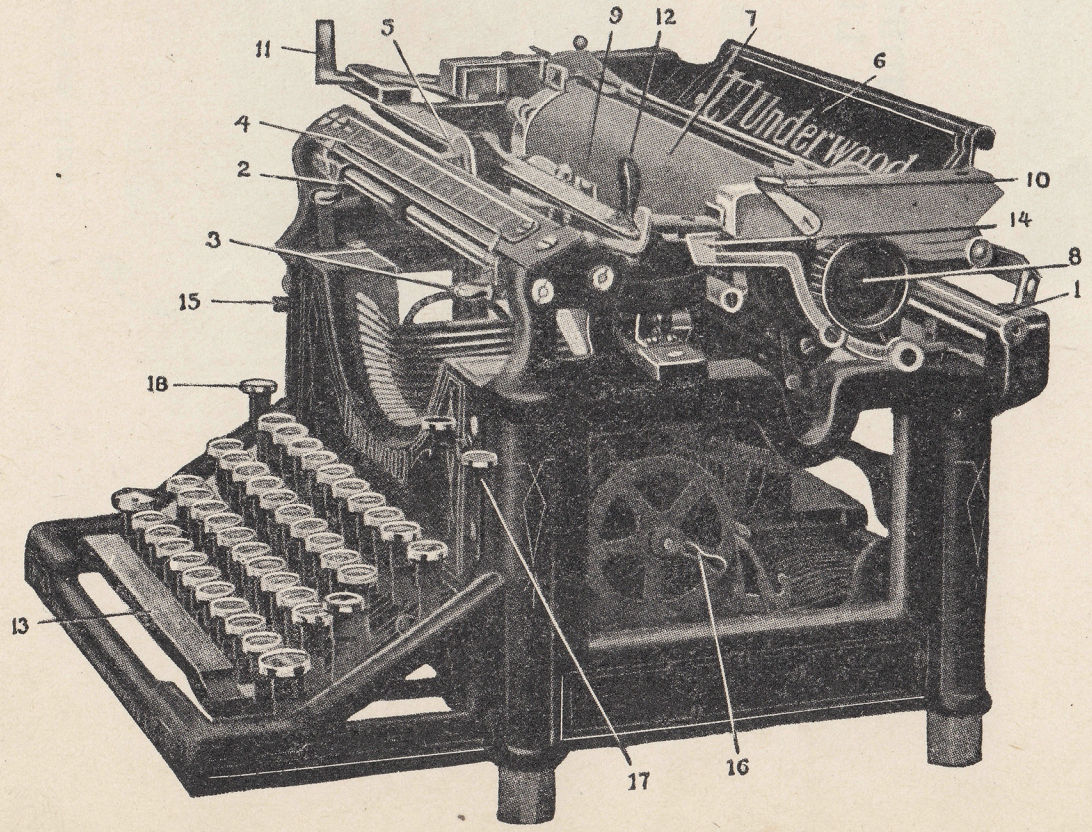
LEFT END OF CARRIAGE

Plate NN



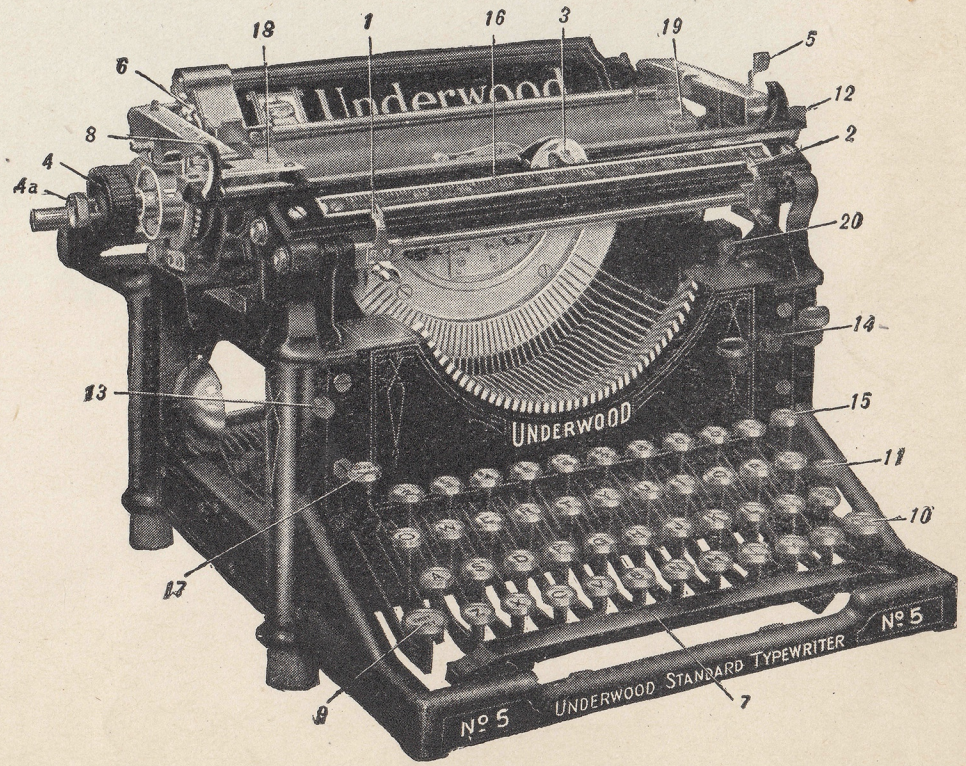
RIBBON MECHANISM

Plate OO



RIGHT FRONT VIEW

Plate PP



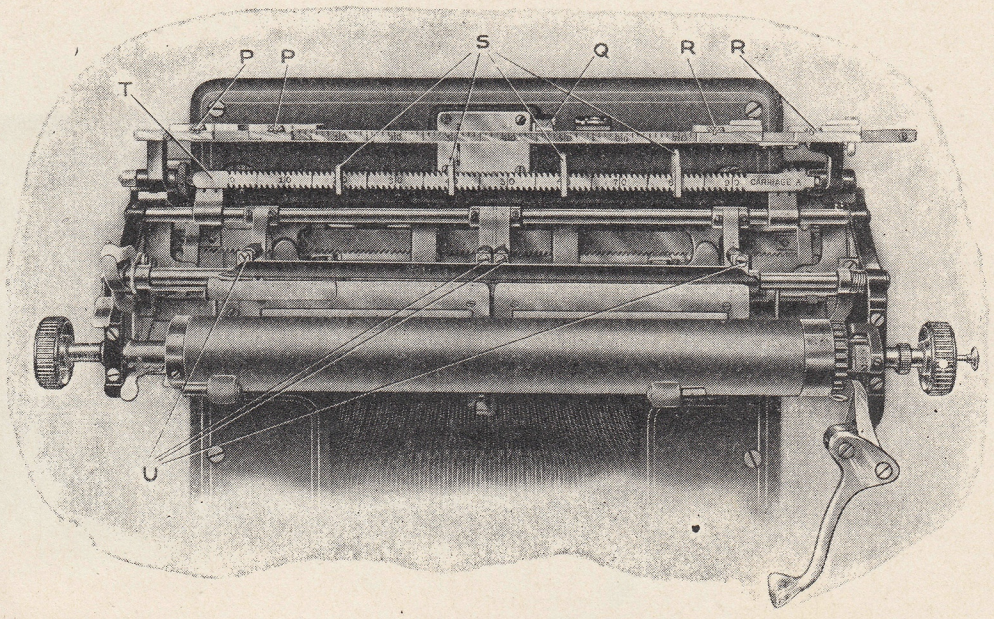
LEFT FRONT VIEW

Plate QQ



NO. 20, TOP FRONT VIEW

Plate RR



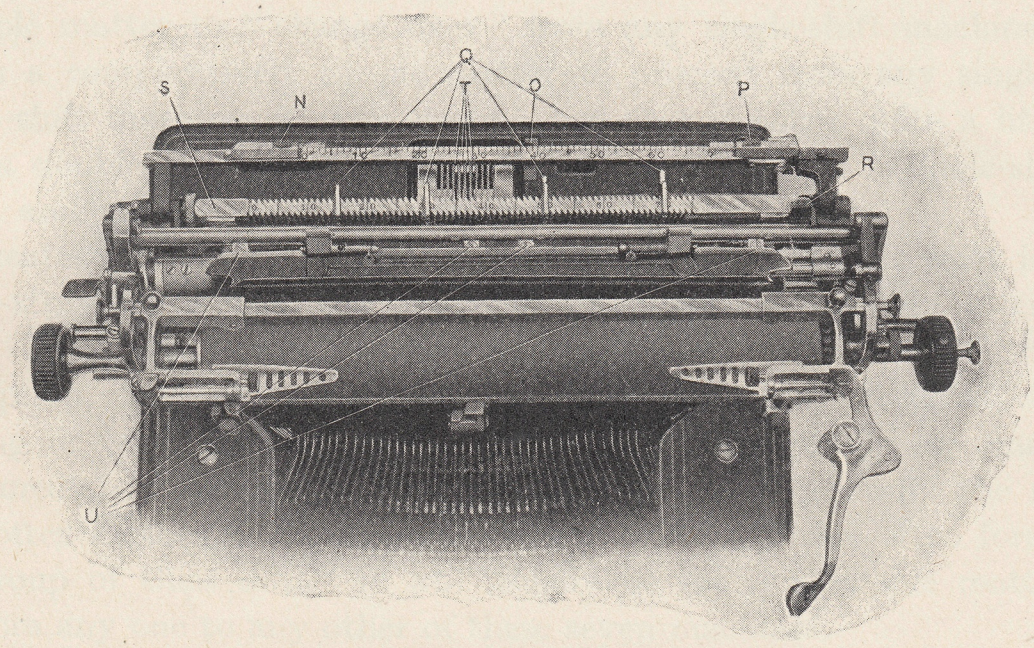
NO. 20, TOP CARRIAGE VIEW

Plate SS



NO. 15, TOP FRONT VIEW

Plate TT



NO. 15, CARRIAGE FRONT VIEW

MECHANICAL DEVICES OF THE TYPEWRITER

I

INTRODUCTION

TIME was when each make of typewriter bristled with all sorts of strange devices peculiar to its kind. Time was when the operator of any particular machine could not, without fear and trembling, approach the task of manipulating any other. That time has gone for ever. Of late years there has been quite a marked tendency towards standardization in typewriters, with the result that most of the popular writing machines of to-day approximate closely to one general pattern, so that, with very little preliminary instruction, and with very little preparatory practice, it is possible for an operator to proceed from one machine to another.

That " little preliminary instruction " it is the purpose of this handbook to provide : that " little preparatory practice " the operator must obtain. There are difficulties, of course ; but they can be overcome in a comparatively short time. The two chief difficulties will be found to lie in the touch, and in the arrangement of the keyboard.

As regards touch, it may be said that, though there has been some approximation in this respect, there is still a difference in the touch of different machines. Until the operator has become used to that difference, it will be found that it tells against facility, accuracy, and speed.

As regards the different arrangements of the keyboard, it should be said that it is a simple matter to " change over " from any single-shift machine to any other ; that it is a comparatively simple matter to proceed from any single-shift machine to a non-shift machine, or vice versa ; but that it takes quite a little time to get used to a double-shift machine after being accustomed to a single-shift or non-shift machine, and vice versa. (*See* Section V—THE KEYBOARD.)

The greatest likeness lies between machines constructed on what is known as the front up-stroke principle—the machines distinguished with an asterisk in the list on p. 2. They have very many features in common. For example, they are all, with one exception, single-shift machines : they all, with one exception, use a ribbon as the inking device : their types—again, with one exception—lie round an arc of a circle immediately behind the keyboard : they have generally the same actuating devices, often located in the same positions. In short, they often form a mechanical family group of their own. It will usually be found a simple matter to " change over " from any one to any other of these seven machines.

The other three machines (not marked with an asterisk in the list) differ considerably, not only from the seven front up-stroke machines, but also from one another.

The ten machines dealt with in this handbook are the following—

BARLOCK No. 14.
EMPIRE No. 1 and No. 2.
* MONARCH No. 3.
OLIVER No. 9.
* REMINGTON No. 10 and No. 11.
* ROYAL No. 10.
* L. C. SMITH No. 8.
* SMITH PREMIER No. 10.
* UNDERWOOD No. 5.
* YOST No. 15 and No. 20.

It will be noted that, in the above list, the alphabetical order of precedence has been adopted. That alphabetical order of precedence also holds good in the instructions given in the body of this book, except in a few instances where, for the sake of convenience, or clearness, machines have been specially grouped.

The above ten machines are selected for treatment because they all enjoy considerable commercial popularity in this country. There are, of course, many other writing machines in existence, but it would obviously be impossible to bring them all under survey: they are "too numerous to mention."

The instructions in this book apply strictly only to the current and up-to-date models of the various machines in question, though they will, in the cases of several of the machines, be found to be wholly or partially applicable to earlier models. The model number given in each case in the list is that of the current model.

The various instructions herein given are, to a great extent, taken bodily from the instruction books issued by the several companies. To that extent, therefore, they are "official." This handbook is not, however, a mere compilation. Much original matter has been introduced. Moreover, in cases where it seemed that the "official" instructions were not so clear as they might be, and in some few cases where it seemed that Americanisms might with advantage be anglicized, the author has taken the liberty of re-casting the "official" instructions.

It should here be explained that this is in no sense a handbook of operation: rather it is a handbook of manipulation—handling rather than fingering. For full information as to the practical use and usefulness of the writing machine—touch, fingering, speed, varieties of work, connected processes, exercises, and like matters—the operator should turn to *Pitman's Typewriter Manual.* The present handbook is concerned only with the use and adjustment of the various mechanical devices with which the modern writing machine is equipped; and while, incidentally, some questions of

* Front up-stroke machines.

practical operation are discussed—especially in the earlier part of the work—full information on the methods of practical typewriting should be obtained from the *Manual*.

In order to simplify reference to the numerous plates in this book, they have been grouped together at the front. Each plate is given a distinctive lettering. The various parts in any one plate are figured in accordance with the notation adopted by the manufacturers of the machine referred to. In references to a particular part in a particular plate, the plate notation stands first, and the part notation second. Thus, A 461 indicates part 461 in Plate A; FF 10 indicates part 10 in Plate FF; and so on.

In some few plates, the parts are indicated by letters—not figures. (This method of notation is, *e.g.*, used in Yost plates.) In such cases, therefore, the references are entirely in letters. Thus RRP indicates part P in plate RR. In a few other plates (*e.g*, some of those illustrating the Oliver), parts are indicated by a letter or letters followed by a figure or figures. Thus, UB2 represents part B2 in plate U.

The plates are grouped together because frequent reference is made to them in different parts of the book. Numerous diagrams are printed in the body of the work, because the only references made to them usually occur in the context in which the diagrams are placed. This, of course, simplifies reference to them. The same method of notation is followed, except that the diagrams are lettered with italic capitals instead of Roman capitals. Thus, *B*5 would indicate part 5 in Diagram *B*; and so on.

II

UNPACKING AND MAKING READY

A MACHINE sent by train, or by carrier, is usually so securely packed, that the opening of its case, as well as the subsequent removal and preparation of the machine, will often puzzle the recipient. The following "official" instructions on these points are therefore given, as applicable to some of the machines under survey—

BARLOCK.—Turn to the left the screw A 461, which enters the carriage carrier at the right-hand end : pull the toothed locking lever until it is free from the rack on the side of the carriage. Remove the screws that fasten the clamps to the baseboard.

EMPIRE.—No official instructions are given.

MONARCH.—After removing the machine from the packing-case, or from the metal cover (as the case may be), untie, or cut, all tapes : then lift it from the baseboard, and place it on a typewriter desk or table. The machine is shipped with the drawband or carriage-strap fastened to the carriage-strap stud (M 5480) at the right-hand side of the top plate. The strap should be detached from the stud, and attached to the strap-hook bracket (M 5475), extending downwards from the right-hand end of the frame. The Monarch instruction book gives no information as to the removal of the machine from the packing-case.

OLIVER.—If the carriage is packed separately, unpack it, and put it on the machine in accordance with Section XXXV—REMOVAL AND REPLACEMENT OF THE CARRIAGE—OLIVER.

REMINGTON.—The Remington instruction book gives no directions as to the removal of the machine from its wooden case, but, assuming that the machine has been taken out of it, proceed as follows—

Remove the metal cover (if the machine is provided with one). Remove the four nuts and two metal strips from top of wooden packing strips. Four rubber feet will be found in the box of tools fastened inside the machine case. Remove the wooden feet in the machine, and insert a rubber foot in each, so that the hook fits over the foot-strap of the machine, as shown in Diagram *A*. Screw it tight to the machine base, by pulling downwards on the foot, so that the hook will act as a "key." Ordinarily, the foot can be tightened by hand, though a slot is provided in the nut for a screwdriver. The feet should be screwed down until the end of the nut presses against the cup. Untie and remove all tapes. In an envelope attached to the inside of the packing-case will be found the ribbon for the machine, wound on a spool. Insert the ribbon on the right-hand spool shaft, after attaching the end to the left-hand ribbon spool tape, in accordance with instructions given in Section XXVII—PUTTING ON A NEW RIBBON—REMINGTON.

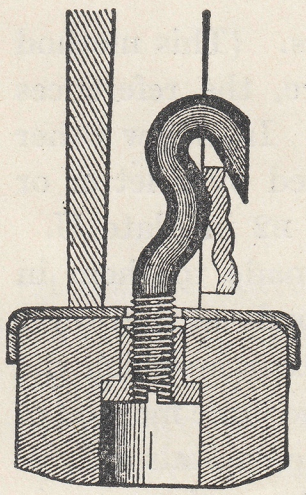


Diagram *A*
RUBBER FOOT
(REMINGTON)

ROYAL, L. C. SMITH, SMITH PREMIER.—No special instructions on these points are given in the companies' manuals.

UNDERWOOD.—Remove the screws round the edge of the bottom of the case. Lift the bottom of the case (to which the machine is attached) from the body of the case. Then take out the four bolts which hold the machine: after which, remove the iron skids. The rubber feet—which will be found in a small package under the rubber cover—should then be screwed to the machine. Cut the tapes which hold the carriage, the locking device, and the back-spacer. The marginal stops will be found pushed to the centre of the scale, and should be adjusted in accordance with instructions in Section XIII—MARGINAL STOPS—UNDERWOOD.

YOST.—Open the case from the bottom (identified by the presence of four bolt-heads) by removing the screws which hold it. Lift up the bottom, and it will be found that the machine is clamped thereto by four brackets. The nuts holding these brackets in position must be removed with a spanner or pair of pincers, all packing paper being taken away, and all tapes untied. The carriage—which is packed separately—must be detached from its position inside the case, by removal of the holding tapes or blocks. Fit the carriage to the machine in accordance with

Section XXXV—Removal and Replacement of the Carriage—Yost. The drawcord must then be unhooked from the drawcord holder, and placed in a similar hook on the carriage-carrier. (*See* Diagrams *W* and *X*, p. 73.)

III

ON THE USE OF TOOLS, AND "TINKERING"

All the typewriter companies strongly deprecate any interference with the mechanical adjustments as they stand when the machine is delivered. Some few of the companies do, indeed, give special instructions with regard to the adjustment of tensions, but even they suggest that it is best to leave things alone. (*See* Section XXIX—The Tensions.)

There is a strong temptation for the recipient of a new typewriter to "tinker." There is generally a handy set of tools simply asking to be used, and curiosity suggests that it would be interesting to see what the effect of their use would be. Nevertheless, resist the temptation, and do not gratify the curiosity. The mechanics at the factory know best. At all events, touch nothing with a tool until you have had many weeks' use of the machine—by which time you will probably have come to the conclusion that the factory adjustment is perfect.

Of late years, there has been a marked tendency for the manufacturers to "fix" their machines in such a way that tool-made adjustments are impossible except to the skilled mechanic. In the old days, the tensions, for instance, were adjustable with the fingers: now, special tools are generally needed—which are not provided in the outfit supplied with the machine. The result is that the skilled mechanic is far less often called in than formerly. *Verb. sap!*

IV

POSITION OF THE MACHINE

All manufacturers urge the importance of standing the machine squarely and firmly, with its rubber feet resting directly on a good, solid flat desk, table, or cabinet—the baseboard being laid aside. Only thus can satisfactory, reasonably quiet, operation be secured.

The Oliver Co. advises that the baseboard should be turned upside down, if it is used under the machine, as the rubber feet in the machine must rest on a flat surface, not in the holes of the baseboard, which are for transit purposes only.

Many manufacturers advise that, if reduction of noise is considered important, the machine should rest on a cork, or felt, mat. Truth to tell, however, the use of such a mat does not greatly reduce the noise—though it does to some small extent do so.

A machine operated on a drop cabinet is apt to be rather noisy, because of the echoing of the sounds back from the well and the flap.

It is generally agreed that the height of the table, or other support, should be about 25 inches from the floor; and that the height of the seat of the operator's chair should be such that the keyboard is, if anything, slightly below the level of the elbows. At all events, the elbows should not be at all considerably below the level of the keyboard.

V

THE KEYBOARD

Some form of "universal" keyboard is adopted on all the machines described in this book.

On six, of the seven, front up-stroke machines, not only is the location of the letters of the alphabet identical in all instances, but the distribution of the other characters is very similar. Moreover, the shift-keys have also the same positions in all six machines. These machines are the Monarch, Remington, Royal, L. C. Smith, Underwood, and Yost.

In the cases of the Barlock and the Smith Premier machines, the keyboards are, of course, modified by the fact that they have no shift-movement, but a separate key for each character. This involves a double keyboard, and a special distribution of the figures, signs, and miscellaneous characters. Each half of the double keyboard, however, carries out the "universal" arrangement of the alphabet.

In the cases of the double-shift machines—the Empire and the Oliver—the "universal" arrangement is followed as regards the alphabet. The figures, signs, and miscellaneous characters are distributed in convenient positions.

The position of the space-bar is the same in all ten machines—between the keyboard and the operator.

The various actuating keys—such as the shift-lock, marginal release, back-spacer, etc.—vary a good deal in location on the different machines. Their exact location will be indicated in each instance in the appropriate section.

VI

TOUCH

The manufacturers one and all insist on the cultivation of a light touch. The keys should be depressed with only such energy as will ensure clear-cut impressions on the paper. A heavier touch than that means ugly work, unnecessary wear of the cylinder, types, and typebars, and general strain on the mechanism.

So far as the appearance of the work is concerned, the matter is one that is better

dealt with in a handbook of practical instruction, and the reader is accordingly referred to *Pitman's Typewriter Manual* for treatment of that part of the subject. Here, it is only the mechanical aspect of the subject that we wish to present.

A heavy touch is bad for the machine. Systematic heavy impression of the characters—particularly the smallest characters, the full-stop, the comma, and the hyphen—will soon puncture the cylinder. Once the holes are there, good-bye to the possibility of decent work ; for such holes mean that there is no longer any proper backing for the impact of the types on the paper.

The amount of energy required for the depression of the keys varies with different machines—even with different machines of the same make. But, whatever the machine in use may be, the rule remains the same—only strike the keys hard enough to ensure clear-cut impressions on the paper.

All manufacturers tell us that the touch should be staccato. " Touch and go " should be the operator's motto. Again, for a full discussion of this subject, the reader is referred to *Pitman's Typewriter Manual.* So far as the mechanical side of it is concerned, it should be pointed out that a lingering touch interferes with the proper action of the machine. It hampers the responsiveness of the mechanism which returns the typebars to their normal position. Further, it is very apt to produce " shadowing "—the double impression of the types, a ghostly second impression appearing on the paper after the first real impression. The reason for this is that when the type rebounds from the cylinder, it is " caught up " again by the " follow through " of the finger : it is thus forced a second time against the paper, which, owing to the construction of the high-speed modern escapement, has travelled, with the cylinder, slightly to the left, to be ready for the next impression legitimately due.

Don't follow through. Typewriting is not golf !

For discussion of the questions of the timing of the depressions, " Touch " typewriting, etc., see *Pitman's Typewriter Manual.*

VII

ON PREVENTING AND REMOVING DIRT

ALL manufacturers warn us that dust is the typewriter's worst enemy. Death and dust are, however, the two surest facts in life : they are bound to come. So far as dust is concerned, something, happily, can be done to prevent it, and, when not prevented, to remove it.

Keep the machine covered up when not in use. That will minimize the nuisance ; for the typewriter gathers more dust in disuse than in use. A soft collapsible rubber cover is preferable for this purpose to the metal cover usually supplied with the machine.

Once a day, remove all visible dust with a rag. Where inaccessible to the rag, brush it out with a soft-bristled, long-handled brush—but brush lightly where " the parts concerned " are delicately made, or you may do damage.

Eraser dust is a great trouble. Keeping the machine covered when not in use will not, of course, avail to minimize this trouble. You must just brush away the eraser dust systematically every day—more often, if you have time. The eraser dust contains abrasive from the eraser itself, and that abrasive grinds mechanical friction points—particularly the typebar bearings and guides—on which it mostly falls, unless you are careful. Something, however, can be done to prevent it falling there. When erasing, move the carriage to the right or left to some point from which the eraser dust produced cannot fall into vital parts of the mechanism : then blow, or brush, away the dust. (*See* Section XXIV—Corrections—Smith Premier.)

If by any chance the parts get gummed up by an accumulation of old dirty oil, paraffin or benzine may be used to remove it. The use of such scavengers is, however, attended with some risk, because neither of them is a lubricant. Unless, therefore, working parts are properly lubricated after application of paraffin or benzine, they will grind, and will wear rapidly.

TO OBVIATE RUST

Rust is dirt—" matter in the wrong place."

Rust on a typewriter can only be prevented ; it cannot be cured : it is too late to deal with it effectually after it has formed. Some operators rust everything they touch : such operators ought to be careful to wipe over all bright parts daily with a lightly oiled rag—not for the sake of lubrication, but for the sake of rust prevention. Even the corners of the dull and enamelled parts are better for this treatment.

More normally constituted operators should wipe over the bright parts in this way, say, once a week. A very thin trace of vaseline is as good as a trace of oil—and its effects are more lasting. Don't, of course, leave " weeping " surfaces, or manipulation will become a messy business : just the merest superficial trace is all that is needed.

A mixture of bees'-wax and turpentine is excellent for application to any parts of the nickel or enamel where there is no mechanical action. Such mixtures can be bought ready-made—*e.g.*, in the form of Ronuk, or Johnson's Prepared Wax. The former is sold mainly for furniture and linoleum, and the latter for motor-car bodies ; but both preparations are fine preservatives of the bright parts and the enamel of typewriters. They are first applied in a thin smear, and this smear is afterwards spread and polished with a soft cloth.

A hint may here be given as to the best method of cleaning the celluloid key-tops now generally used. They are apt to get stained with dye from the ribbon (or pad) in use. Do not try to remove the stain with benzine or methylated spirit, for that simply has the effect of driving the dye into the celluloid, and makes things worse than ever—and permanently so. A paste metal polish, like Globe polish, will remove the stains quickly and thoroughly.

When it is desired to give the Oliver a thorough cleaning, it is best to remove the carriage. (*See* Section XXXV—REMOVAL AND REPLACEMENT OF THE CARRIAGE —OLIVER.)

VIII

OILING

ALL typewriter manufacturers emphasize the necessity of adequate, but not excessive, lubrication of friction points. Several of them, however, remind us that friction has been so largely eliminated from the modern typewriter, that the need of lubrication is comparatively slight, so that oil should be sparingly applied. In the old days, typewriters were, and had to be, kept liberally oiled : now it is different.

It is a good general rule (subject to exceptions afterwards to be mentioned), to apply oil lightly and systematically to all points where friction occurs, and afterwards to wipe away any visible excess. Only a trace will then be retained by the mechanism, which will, however, be quite sufficient for its needs. There should certainly be no " blobs " of oil apparent : there should not even be any visible smears.

The best method of conveying oil to the friction points is to use a wire dipper, or " touch oiler," as it is termed by some of the companies who supply one in the machine outfit. It is in the form of a pointed stiletto-like instrument—a button-hook without a hook, and with a point. This is dipped into the oil-bottle, and its lower end is then applied to the friction point which it is desired to lubricate, in such a way that a tiny dribble of oil runs down to the point concerned. This effectually prevents any excess getting there. A good substitute for the " official " oiler is a long, thin hairpin with the legs twisted together spirally.

Don't use the oil-can : regard it as a relic of the past. It is wasteful, dirty and mischievous. The excess oil which it delivers collects dust, with the result that a greasy mud is formed, which clogs the mechanism badly. Even when the oiler is used, any free visible oil should be wiped away with a rag.

Do not allow oil to get on to rubber parts—*e.g.*, the cylinder and the feed-rolls : it perishes them.

Keep oil off the ribbon, and off the pad.

Speaking generally, it is undesirable to oil ball-bearings—whether in typebars or elsewhere. The makers' instructions should, however, be followed.

It is important that the right kind of oil be used. Most makers recommend their own brands, though they also tell us that a good clock-oil will serve. Clock-oil is, however, not readily procurable, and it is as well to follow the makers' advice, and buy the brands recommended by them. A shilling bottle should last for the best part of a year—if used with a wire oiler. It is safe to say

that any typewriter manufacturer's oil is suitable for use on any make of machine.

On the other hand, any ordinary "everyday" oil is utterly unsuitable for use on a typewriter. It simply plays havoc. It clogs, gums, catches dust, and sets up more dragging action at the friction points than there would be if lubrication were entirely neglected. Bicycle oil, and sewing-machine oil, are utterly impossible for use on the typewriter. The March Hare in "Alice in Wonderland," when told that butter wasn't good for the works of his watch, replied: "It was the best butter!" When you gum up your typewriter with bicycle oil, or sewing-machine oil, don't try to excuse yourself by saying: "It was the best bicycle oil, or sewing-machine oil!" because all such oil is bad.

Following are specific instructions given by the various makers as to lubrication, or as to non-lubrication, of certain parts—the general principles being those set forth above.

BARLOCK.—Do not put any oil on the carriage ball-races. Remove the platen (*see* Section XXXIV—Removal and Replacement of the Cylinder), and put a drop of oil on the bearings of the platen every few months. While the platen is out of the machine, move the carriage to the right, until the spacing-dogs and star-wheel are visible: then put a drop of oil on the bearings of the dogs, star-wheel, and pinion-wheel. Just touch with the wire dipper the ends of the bearings on which the paper-feed rolls revolve, taking care not to touch the rubber.

EMPIRE No. 1.—Oil the pivotal and sliding points of the key action at B, D, E, G, H, and K (Plate H) once a week. The surface J should be wiped clean with a slightly oiled rag every morning. Oil the dogs of the escapement that play into the rack on the carriage (J 9), and also the post of the spring drum (J 68) twice a week. Other parts may be oiled once a week—particularly the bearings at the end of the paper platen and feed roll shafts in the vertical arms of the carriage, and the vertical slides at the end of the platen; also the pivots at each end of the universal bar (J 178). See that the six rolls on which the carriage travels revolve freely. Wipe clean all sliding contacts before oiling, in order to remove dirt and gum.

EMPIRE No. 2.—Oil the pivotal points of the key action regularly once a week. The surface upon which the types slide to and from the cylinder should be wiped clean with a slightly oiled rag every morning. Oil the post of the spring-drum once a week. Other parts may be oiled once a week—particularly the bearings at the ends of the paper platen and feed-roll shafts in the vertical arms of the carriage; also the pivots at each end of the universal bar. The teeth of the escapement sprocket, and the spindle-ends upon which it revolves, and also the dogs, should be very lightly oiled with a touch oiler at least once a week. The parts in question can be seen by moving the carriage as far as possible to the right. They are located just behind the point where the types strike the cylinder.

MONARCH.—Oil all typebar pivotal bearings (O 4350) at least once a month. Pressure roll bearings (O 10680 and 10785) should be oiled from two to four times a year. Frequently oil the platen detent roller bearings, the little roll on the ratchet at the left hand of platen. The bearings of the escapement-wheel (N 5520) on the back of the machine should receive a small drop of oil every two weeks. A small oil-hole, provided for the purpose, will be found in the top of the escapement-wheel bracket, in front of the escapement-wheel. Also put a little oil on each of the blades of the escapement-wheel where they come into contact with the dogs. A cloth slightly oiled should be used to wipe out the carriage race-ways. This may be done by moving the carriage first to one side, and wiping top and bottom, and then moving the carriage to the other side, and wiping similarly.

OLIVER.—Once a month, apply a little oil to the following places—

Plate V—

Axles (A 5) and crank-pins (B 5) of the typebars.

Lower ends of connecting-links (uprights connecting typebars with key-levers) where they connect with the key-levers.

The ball-bearing axle of the wheel where the tail-rod (I 2) runs through the standard at the rear of the machine.

The thrust-block rolls (V 2).

The bearings (S 5) of the spring-barrel (F 2).

Plates P and R—

Oil-holes in the thumb-wheel (A).

Plates Q and T—

The bearings of all feed rolls (K and X).

The axles of the travellers (O and Y) under the carriage, but not the rails on which these travellers roll. (The rails should be kept clean.)

Plate W—

Ball-bearings at ends of shaft (T 3) and shift-cam rollers (U 3).

Pivot-screw bearings at ends of universal-bar shaft (R 3).

The joints (V 3) on escape-lever slotted link.

The joints (K 3) at the rear ends of shift-levers.

The joints (B 3) at the rear ends of key-levers.

Plate U—

The two bearings on escape-dog link (J 5).

The escape-lever hub bearing screws (P 5 and Q 5).

The upper and lower bearings of the escape-shaft (U 2).

The upper and lower ends (M 5 and N 5 respectively) of the swinging-links which support the rail-frame.

The joints (C 5, D 5, E 5, G 5, and H 5) of the ribbon-carrier mechanism.

To oil upper and lower bearings of escape-shaft (U 2), lock the "Cap"-shift down, remove the carriage (*see* Section XXXV—REMOVAL AND REPLACEMENT OF THE CARRIAGE—OLIVER), and apply oil to bearings.

REMINGTON.—The pinion-wheel shaft should be oiled occasionally, by putting a drop of oil in the oil-hole, which will be found in the top of the pinion-wheel stand, (near AA 21731). If at any time the points of the dogs (AA 20193 and 20194), and the teeth of the escapement-wheel, get dry, apply a little oil to the teeth of the escapement-wheel (AA 21731). Two or three drops will be sufficient for all the teeth. At intervals of about a month, the typebar bearings should be oiled very slightly. The best plan in their case is to take a soft, long-bristled brush, put a few drops of oil on it, rub it in, and then brush the oil well into the bearings—where it will leave sufficient. Avoid any heavy oiling of the bearings here, for excess catches eraser dust—which is bad. The bearings of the spool shaft, and the long ribbon movement shaft, also need occasional oiling.

ROYAL.—This machine needs but little oil. It is delivered with sufficient oil, applied at the proper points, to last for six months, if the machine is given due care. Use no oil on the typebar bearings, or the ribbon vibrator (BB 27). The grooves of the carriage race-ways, upper and lower, should be wiped out with a slightly oiled cloth, but no free oil is needed, as the carriage runs on ball-bearings.

L. C. SMITH.—Do not oil the typebar connecting-links, directly below the scale, as they do not require lubrication, and, if oiled, would collect dust. The typebar bearings—being ball-bearings—should not be oiled.

SMITH PREMIER.—The typebar ball-bearings should not be oiled. The ball-ways of the carriage should be wiped clean, and given two or three drops of oil occasionally. Oil carefully the bearings of the escapement mechanism, carriage driving-gears, ribbon-driving and vibrating parts, line-space and poppet, etc. Sometimes, it is well to wipe the key-stems with an oiled cloth, leaving just a trace of oil on the stems.

UNDERWOOD.—The back rod should be oiled daily. Do not oil the variable line-space attachment, or the typebar bearings.

YOST.—Occasionally oil the bearings of the carriage rails.

IX

CLEANING THE TYPES

THE need of type cleaning arises in the case of all machines. While modern ribbons fill the types less than the ribbons of yore did, they still do fill them, and removal of the accumulation of dirt (mostly ribbon-fibre and paper-dust), is occasionally necessary. The best way is to brush all the types once a day, before beginning work. This will ordinarily be sufficient—though not, perhaps, when a new ribbon is in use.

The use of a pin to remove dirt from the types is to be discouraged, it being apt to damage the type-faces, unless very carefully applied. If, however, the dirt is badly caked, and the brush won't remove it, loosen it carefully with a pin, and then brush out.

The use of benzine for type cleaning is unnecessary and messy. Applied with a brush—as it is—it does a kind of "spray-work" over everything in the neighbourhood —and the dye is particularly penetrating.

The types in front-stroke machines can be cleaned very easily, and—in all cases except the YOST—the method is the same. Pass the type-brush (not too vigorously), with a fore and aft movement over the faces of the types as they lie in their normal positions.

It is important that the types of the front upstroke machines should be brushed with a fore and aft movement—not sideways. Brushing sideways is apt to bend the typebars, or strain their bearings, and any such damage is apt to make the bars stick, or to throw their alignment out.

The removal of dirt from the YOST types is not so easy. Each type must be dealt with separately by application of a type-brush. It is not a simple matter to get at the face of a Yost type with the brush. Perhaps the best way is to hold the brush, with the bristles facing you, up against the type-guide, and then smartly to depress the key corresponding to the dirty type. If this is done a few times, the dirt will be forced out. While it is not so easy to clean the Yost types, it is only fair to say that they very rarely need cleaning—the pad used on the Yost not tending to fill the types as readily as the ribbons used on other machines. When a Yost type gets filled, it is generally with eraser-dust, and not with pad fibre. It is important, therefore, to remove the dust from the surface of the paper immediately after an erasure has been made. Otherwise, the types come into direct contact with the paper at the point where the erasure has been made, collect the dust, and fill accordingly. If this precaution be observed, Yost types will very rarely need attention. (This "tip" applies, by the way—though to a smaller extent—to other machines.)

The BARLOCK types should be brushed with an up and down movement—not sideways—for the same reason as is stated above.

If the OLIVER types are brushed when there is work in the machine, a sheet

of paper should be laid over it to prevent its being soiled with spatter from the brushing.

The EMPIRE types can be cleaned with two or three sweeps of the brush as they lie in their normal positions. Any dirt brushed out of the types on to the slide-plate should be carefully removed. If an Empire type-bar is bent (by rough brushing or otherwise) so that its type does not enter the guide readily, it can be sprung back to " truth " with the fingers.

X

INSERTING THE PAPER

THE method of inserting the paper is practically the same in all cases. Push the paper down the paper-table, into the crevice behind the cylinder, and then " swish " it into position with a quick turn of one of the thumb-knobs. The following instructions are given by the various makers—

BARLOCK.—Take the paper in the left hand, top edge downwards, and writing side away from you, and slide the sheet down the paper-table (A 348) until it rests against the platen (A 363): then, with the fingers of the right hand, rotate the platen-wheel from you (A 568). While so doing, lift up the paper-scale with the left hand, allowing the scale to drop down upon the paper as soon as the top edge of the sheet has passed over the top of the platen. While inserting the paper, allow it to *rest* against the platen: it will then feed forward perfectly straight: if *pushed* against the platen, it may enter crookedly—in which case it should be adjusted in accordance with Section XI—ADJUSTING THE PAPER—BARLOCK. After a little practice, the paper can be rapidly brought into position by dropping the tips of the first and second fingers of the right hand on to the edge of the wheel, and pushing the whole hand smartly forward, as in Diagram *B*.

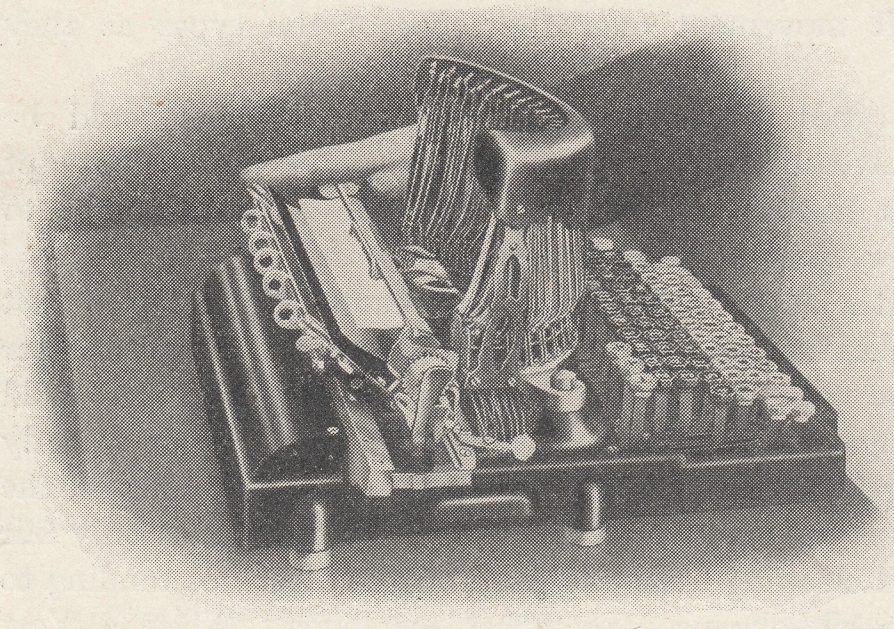


Diagram *B*

INSERTION OF PAPER (BARLOCK)

EMPIRE No. 1.—Insert the top edge of the paper, held in the left hand, face side down over the paper shelf (H or I, P) and under the Platen (H or I, M): at the

same time, turn the platen by the wheel F 39 till the top edge of the paper is an inch above the scale (F 22). Then lift the scale until the sheet can be pushed beneath and behind it (see Plate G), after which drop the scale into place.

EMPIRE No. 2. — Insert the top edge of the paper, held in the left hand face side down, over the paper-shelf (K 399), and under the platen or cylinder (K 373). At the same time, turn the platen by one hand-wheel (K 383), until the top edge of the paper is an inch or so above the scale (K 403). Then lift the scale until the sheet can be placed beneath it: after which, drop the scale into place.

MONARCH.—The liftable paper-finger (M 10766) at the left on the paper-finger rod (M 10445) over the platen (M 12635) should be set to the left as far as it will go, taking hold of it above the rod. Then insert the paper, resting it lightly against the paper-table (M 10505), the left edge of the paper being flush with the end of the platen, letting it drop down behind the platen as far as it will go. Turn the platen-twirler (M and N 12750), found at either end of the carriage, until the end of the paper is carried round the platen, and appears about an inch above the ribbon.

OLIVER.—Place the paper between the two shields (P M) at the back of the machine, and then turn it into place with the knobs (P A or B) at either end of the carriage. The paper-fingers (P L) on top of the platen can be moved any distance to suit any width of paper. They should be so set that their outer edges overlap the edges of the sheet to be written on, and need not, of course, be subsequently disturbed unless a different width of paper is used. After setting these paper-guides, adjust the marginal stops (T D and V K 2), so that the types cannot strike the paper-fingers. (*See* Section XIII—THE MARGINAL STOPS—OLIVER.)

REMINGTON No. 10.—Drop the edge of the paper well down on the rubber feed-rolls behind the cylinder (X 31611), with the left edge of the sheet just touching the paper side-guide (X 33922), and so that it is immediately caught between the cylinder and the feed-rolls. Turn the cylinder from you by either one of the cylinder thumb-wheels (X 31671 and 31681), until the lower edge of the paper has passed an inch or so beyond the line-gauge (X 26964), bringing it beneath the paper-guides (X 33891 and 33901).

No. 11.—This model is equipped with needle-point end-guides, which, when used, govern the insertion of the paper to a high degree of accuracy. Their use will become more obvious after perusal of Sections XI—ADJUSTING THE PAPER, and XXXVI—THE REMINGTON END-GUIDES. These needle-point guides are brought into contact with the cylinder in a row just behind the back feed-rolls, whenever the feed-roll release lever is fully depressed. This row of points forms a stop for the paper when it is being inserted, and so starts it on its way absolutely square. After being thus squared, the pressure on the feed-roll release lever is relaxed, the back feed-rolls grip the paper, and it is then fed into writing position in the same way as on the No. 10.

ROYAL.—Uniform margins on all sheets are assured by feeding the paper with the edges against the left or right paper-guide (BB 32 or 23). Either or both may be used for the purpose. As the paper passes round the cylinder, and comes up in front, it may be passed under the bail (BB 34). This bail serves the same purpose as the paper-clamps, or paper-fingers, used on other machines.

L. C. SMITH.—Insert the paper evenly between the paper-table (DD 20) and the platen or cylinder (DD 18), and twirl the knobs, located for that purpose at either end of the cylinder (DD 16 and 24), until the paper-feed takes hold ; or, if writing a letter, until the date line (if any) is brought up to the printing point. The line-space lever (DD 6) will advance the paper from the moment when the sheet comes into contact with the paper-feed, when actuated.

SMITH PREMIER.—Insert the paper evenly between the paper-table (FF 1) and the platen-roll (FF 2), with left edge of the paper just touching the paper side-guide. By turning the platen towards the rear, by rotating the platen-knob (FF 3) at either end of the platen-roll, the paper may be brought into any desired position. The paper should pass under the swinging paper-fingers (FF 4), so adjusted that the rubber rolls (FF 4 a) of the paper-fingers rest at least their full width on the edges of the paper. This holds the sheet firmly after it leaves the paper feed-rolls, and ensures straight writing, even to the very lowest edge of the sheet.

UNDERWOOD.—Drop the paper upon the paper-rest (OO 6), as nearly as possible in the centre of the cylinder. Place the lower edge of the paper close down to the cylinder, and turn the cylinder from you by either one of the cylinder-knobs (OO 8), until the position of the paper at which you wish to write is reached.

YOST.—Rest paper against paper-table, with left-hand edge well up against the paper-gauge (which is adjustable), and let it drop into position between feed-roll and platen. Set the adjustable paper-guides so as to grip the edges of the paper. Then turn the platen thumb-wheel to bring the paper into writing position.

In the foregoing instructions, references have been made to two devices, the functions of which are not very clearly defined in the typewriter companies' handbooks—(*a*) The paper-guides, and (*b*) The paper side-guide.

(*a*) The paper-guides are given various names by different companies—paper-fingers, bail-rolls, etc. Their function will be better understood after perusal of Section XI—ADJUSTING THE PAPER. Meantime, it may be said that the purpose of these guides, rolls, or fingers, is to direct and control the paper as it is fed upwards by the rotation of the cylinder—particularly when the bottom edge of the sheet has been fed so far upwards as to have escaped from the grip of the feed-rolls. Without them, the paper would stand away from the cylinder, so that the writing would be blurred. It is best to set them so that one roll presses on each (right and left) edge of the paper, but does not come within the writing

zone. It is usually necessary for at least the left-hand roll to be so pressing. Their adjustment (which must be related to the positions of the marginal stops) is usually simply a question of sliding the guides, fingers, or rolls, laterally. (*See* last paragraph in Section XIII—THE MARGINAL STOPS.) The following special instructions are given—

REMINGTON.—To slide the paper-fingers (X 33891 and 33901) easily to any desired position, press downwards on the release arms (of which there are two —one on each side of the carriage-frame, and each controlling the paper-finger on its own side only). The paper-finger will remain in the position where the hand of the operator leaves it.

YOST.—Set the adjustable paper-guides (QQ D D) so that they grip the edges of the paper. When moving either of them, care should be taken to release them from contact with the platen by depressing the paper-guide release-lever (QQ E E).

In this connection, read Sections XI—ADJUSTING THE PAPER; XIII—THE MARGINAL STOPS, and XVI—ACCOMMODATING PAPER OF DIFFERENT WIDTHS; ENVELOPES, CARDS, etc.

(*b*) The paper side-guide is also variously named the paper-guide, paper-gauge, and bill-guide. Its function is to provide a gauge, or guide, for the edge (or edges) of the paper. The paper should be lightly pressed laterally against this guide, in course of insertion, so as to ensure a regular margin—as it will do as long as the left-hand marginal stop remains in one position. The adjustment of the device is usually simply a matter of sliding it to the right or the left, it being retained by friction at the point where the operator leaves it. It sometimes slides on the paper-shelf, and sometimes on a rod provided to carry it. The following special instructions are issued—

REMINGTON.—To change the setting of the paper-guide (X 33922), loosen the thumb-screw, move the guide to the desired position, and tighten the thumb-screw. The guide is hinged, and may be turned back out of the way of the paper if not needed.

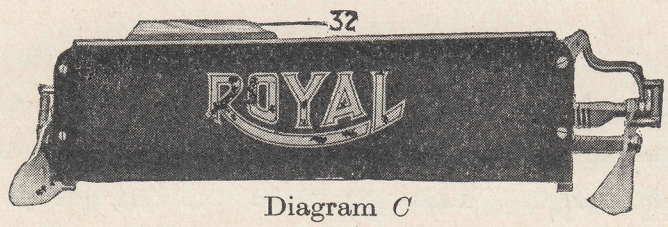


Diagram *C*

PAPER-GUIDES (ROYAL)

ROYAL.—In this case, also, the guides (of which there are two—one for the right-hand edge, and one for the left-hand edge, of the paper) may be folded back out of the way. *See* Diagram *C*.

XI

ADJUSTING THE PAPER

If the paper is by chance fed into the machine crookedly—though that can only be the result of carelessness—it must be set straight. The method of doing so is pretty much the same in all cases, it being a matter of releasing the feed-roll pressure, and then pulling the sheet "all square." Or, if the paper is not laterally just where it should be, it can be moved sideways, once the feed-rolls are released.

It is advisable when adjusting the paper, not only to relax the feed-roll pressure, but also to release, or relieve, the pressure of the paper-guides, or paper-finger rolls. The latter are apt to interfere with the free movement of the paper sideways.

BARLOCK.—Pull the paper to either side by the bottom edge, raising the paper feed release lever (A 349) while so doing, until the upper left-hand corner of the lever is parallel with the side of the sheet.

EMPIRE No. 1.—If the upper edge of the paper is not exactly parallel with the scale, draw back the advanced corner firmly but gently to proper position. If, however, care is taken to present the whole length of the edge of the sheet evenly to the grip of the feed-rolls, before rotating the platen, this adjustment will rarely be needed.

To obviate the wrinkling or tearing of very thin paper in this adjustment and to ensure its even feed between the rolls, especially in manifolding, press towards you one of the paper release levers (E, F, and G, 30) with the first finger of one hand, while drawing back the paper with the other hand. Either right or left hand release can be used.

EMPIRE No. 2.—If the upper edge of the paper is not exactly parallel with the scale, release the paper by an upward pressure of the paper shelf (K 399). This is easily done by using the second finger of each hand at opposite ends of the paper shelf. The paper can then be drawn into correct position with the forefinger and thumb of both hands.

MONARCH.—To adjust the paper endwise or sideways, or to straighten it, pull forward the pressure release handle (M 10670), which is the rearmost upright lever on the left end of the carriage. The pressure on the paper is thus released, and both hands may then be used to adjust, or straighten, the paper. The operator should be careful to see that the pressure release handle is returned to its normal position after the paper has been adjusted, and before beginning to write; otherwise, there will be no pressure on the paper to keep it in place, and it will slip.

OLIVER.—Raise the paper release lever (T s), straighten the paper, and return lever to its normal position.

REMINGTON.—In the case of the No. 10, slacken the pressure of the feed-rolls upon the paper by pressing back the feed-roll release lever (X 33740) with the thumb of the left hand, press down on the feed-roll release lever lock, just behind the release lever, which will hold the lever in position while the paper is being adjusted. Then draw back the side of the paper that projects too far, until it is quite parallel with the line-gauge (X 26964). Free the feed-roll release lever by simply pressing and then releasing it.

On the No. 11 Remington, straightness of the paper is assured if the needle-point end-guides are used. (*See* Section X—INSERTING THE PAPER, and Section XXXVI—THE REMINGTON END-GUIDES).

ROYAL.—Pulling forward the paper release lever (BB 22) removes pressure of feed rolls, and permits the paper to move easily for adjustment. Straighten the paper by setting top edge, or any ruled line, parallel with paper-scales (BB 24 and 33). Throw release lever back, and lower the bail (BB 34), after adjusting paper. (The bail should preferably have been lifted during the adjustment.)

L. C. SMITH.—To straighten or adjust the paper, press forward the paper release lever (DD 22) at the rear of the carriage on the left. The paper can then be adjusted freely.

SMITH PREMIER.—Press forward with the little finger the paper release lever (FF 15), and position the paper at will.

UNDERWOOD.—By depression of the paper release key (OO 10), the pressure of the feed-rolls will be relieved, thus allowing the free use of both hands for adjustment of the paper. When the paper is adjusted, always return the release key to its normal position before writing. If it is desired simply to relieve the pressure from the paper momentarily for a minor adjustment, merely rest the side of the right hand on the paper release key, and, when the hand is removed, the key will return, and the feed-rolls will again engage the paper.

YOST.—The feed-roll release lever (QQ L) at the left-hand end of the carriage is best operated with the side of the hand, thereby leaving the fingers of both hands free to manipulate the paper, when its adjustment is needed. This lever can be locked into position, if desired, by depressing the feed-roll release lever lock (QQ M) immediately behind it. To unlock, press the release lever.

NOTE.—The feed-roll release is useful for assisting the removal of paper from the machine, especially when very thin, and therefore liable to tear, when pulled from the front in the ordinary way. If the feed-roll release lever be actuated, the paper can, of course, be pulled out of the machine without resistance.

XII

THE PRINTING POINT

THE printing point is differently located on different machines. Generally, however, it may be said that on all the front up-stroke machines (except the Remington) it lies within the slot of the type-guide. The Remington has no type-guide, but the instructions given below will define the point.

The following are the appropriate instructions—

BARLOCK.—The printing point is indicated by the pointer in the centre of the lock-plate (A 248). By reference to this, any character may be filled in on a sheet of writing that has not previously been withdrawn from the machine. If, however, it is a question of accurately determining the printing point on a sheet of typewriting that has been withdrawn from the machine, this is done by reference, first, to the scale, and second, to the edge of the lock-plate, with which the line of writing should lie flush. If the paper is so set that the characters are each bisected by a scale degree, and then turned down so that the letters in a line of writing lie flush with the edge of the lock-plate, absolute registration can be secured. As an alternative for reference to the edge of the lock-plate, the line-finder (B 83) can be pushed down on to the paper, where it will indicate the writing line. (*See* Sections XI—ADJUSTING THE PAPER, and XXIV—CORRECTIONS—BARLOCK).

EMPIRE No. 1.—The writing line is four notches, or line-spaces, nearer the operator than the farthest edge of the scale. The centres of the letters correspond with the degree marks on the scale. Absolute registration can, therefore, be secured as follows : Insert the paper, and, depressing either paper release lever (E, F, or G, 30), adjust one of the written lines even with the top edge of the scale. The bottom of the line should be barely visible over the edge of the scale, the letters centring with the scale degrees. While adjusting the paper, note that the line-lock (E or G 47) prevents the platen from rotating while the sheet is being adjusted. Then rotate the platen backwards for four teeth (or line-spaces) to printing position. Registration may be further verified by means of the ledge or notch (E x, J x) at the right side of the support of the front type-guide (H and I L), moving the carriage to the right and left for the full length of the line, with this object in view. The lower edge of the written line should be exactly level with this ledge.

EMPIRE No. 2.—The writing line is five notches, or line-spaces, nearer the operator than the farthest edge of the scale. The centres of the letters correspond with the degree marks on the scale. Absolute registration, therefore, can be secured as follows : Insert the paper, and then press upward the paper-shelf (K 399), which acts as a paper-release lever, and leaves the paper free for adjustment in any

direction. Bring the desired line of writing so that it lies flush with the edge of the scale farthest away from the operator, and so that the required writing point in that line falls directly and centrally above one of the scale graduations. Then release the paper-shelf, and turn the paper backwards for five line-spaces. While adjusting the paper, note that the line-lock (K 424) prevents the platen from rotating. Registration may be further verified by means of the ledge (K 403 B) at the right-hand side of the support of the front type-guide (K 601), moving the carriage to the right and left over the whole length of the line for that purpose. The lower edge of the written line should be exactly even with the top of this ledge.

MONARCH.—The printing point is shown at the opening in the line-indicator and card-holder (M 6605). This indicator rests against the paper exactly on the line of printing: the graduations on the short scale on either side of the opening correspond with the centres of the characters printed.

OLIVER.—The base of the line of writing may be found by reference to the end of the disappearing pointer (V w 2). Lateral adjustment, if required, can be made by reference to the scale, the degrees of which indicate the centre of each character.

REMINGTON.—The printing point is always in the exact centre of the cut-out in the line-gauge (X 26964), and corresponds with the position of the pointer (X 37692) on the carriage scale (X 28473). The small triangular opening at the top of the line-gauge is three line-spaces over the writing point. The writing line lies flush with the cylinder-scale. The degrees on the line-gauge indicate the centres of the characters already printed (if any). The pointer on the front carriage-scale informs the operator of the position of the writing point in relation to other points on the scale.

ROYAL.—The printing point is determined by reference to the front scale (BB 19) and pointer (BB 20), or the similar scale and pointer on the left-hand side of the machine, and also to the graduated bail (BB 34).

L. C. SMITH.—The printing point is midway between the points of the bracket that supports the ribbon vibrator (DD 19), and exactly two spaces above the platen scale (DD 11). Beginners are advised to advance the letter-head (if a letter-head is being used) through the paper-feed until the date line (if any) is even with the top of the scale. Two line-spaces further will bring the date line to the printing point. Laterally, the printing point always lies over a scale degree.

SMITH PREMIER.—All types strike the ribbon through the opening in the ribbon-holder (FF 7) in front of the cylinder. The writing line is always one

space above the scale (FF 5). It is easily located by turning the writing line down to the scale, then spacing up one line. The pointer (GG 34) is located one inch to the right of the printing point. It indicates on the lower scale (GG 35) the corresponding number which at the moment is at the printing point on the upper scale (GG 36). For example, when the pointer indicates 10 on the lower scale, the printing point is at 10 on the upper scale; and so on.

UNDERWOOD.—The writing position on the paper is determined by sight. The line of writing is just above, and parallel with, the cylinder scale (NN 1). Each impression is made directly above the notch in the type-guide. The degrees marked on the cylinder-scale bisect the types in the line of writing. The carriage pointer (PP 3) indicates the number of the graduation on the cylinder-scale over which the character next written will fall.

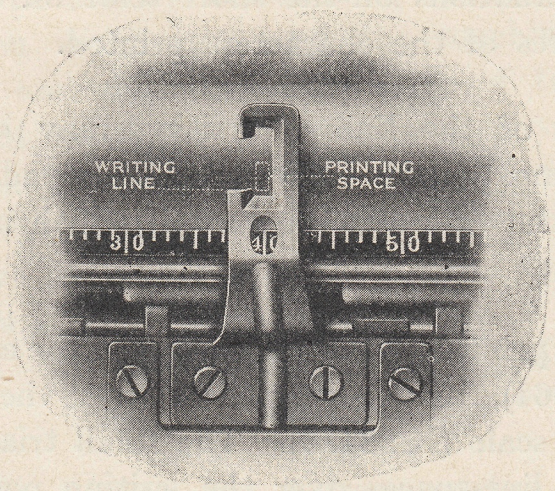


Diagram *D*

PRINTING POINT (YOST)

YOST.—The printing point is clearly indicated by the centre-guide, as shown in Diagram *D*.

XIII

THE MARGINAL STOPS

THE marginal stops are differently located, and differently actuated in the different cases. Following are the appropriate directions—

BARLOCK.—The left-hand marginal stop (A 187) lies towards the back left-hand corner of the machine. When its fingers are pinched together, it can be slid along until the arrow on it points to any required graduation on the paper-scale bar—which will represent the point at which the line of writing will regularly begin. The stop is fixed at any point at which it stands when the operator releases the fingers.

The right-hand marginal stop (A 297) is moved in the same manner, and the graduation to which its arrow points when the operator's hand leaves it will determine the end of the writing line. The warning-bell will ring accordingly—five spaces before the keyboard-lock comes into play.—(*See* Section XIV—THE KEYBOARD LOCK.)

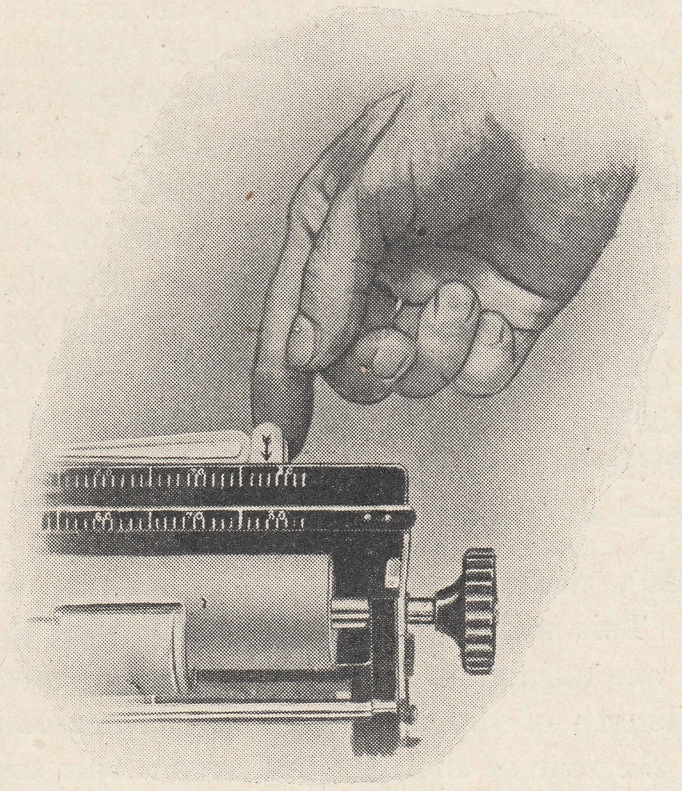


Diagram *E*

RIGHT-HAND MARGINAL STOP (BARLOCK)

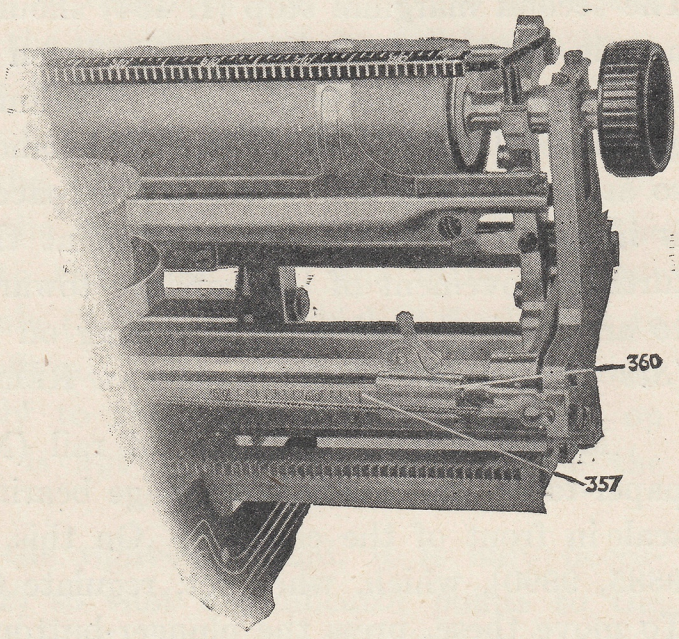


Diagram *F*

RIGHT-HAND MARGINAL STOPS (EMPIRE)

EMPIRE No. 1.—All paper—wide or narrow—should be inserted centrally with the platen, and the marginal stops should then be set to correspond. The left marginal stop is on the notched rail of the frame behind the carriage. It regulates the beginning of the line, and is moved by raising its spring catch (J 59), and sliding the stop along. With the stop moved well to the right out of the way, first set the carriage to the position giving the desired margin: then slide the stop to the left against the rear rail of the carriage so placed. The right-hand marginal stop is attached to the main frame at the right-hand side behind the carriage, and is readily adjusted to the required margin, and secured by means of its thumb-screw. The bell-trip (F 152) is on the release-bar (F 53 B) at the right-hand end of the paper-carriage in front. This should be set by the thumb-screw (F 156) so as to ring the bell four or five letter-spaces before the desired end of the line. The bell then gives sufficient warning. In adjusting the bell-trip, make sure that the thumb-screw is securely fastened.

EMPIRE No. 2.—All paper—no matter what its width—should be inserted centrally with the platen, and the marginal stops should then be set to correspond.

The left-hand marginal stops (L 464 and 465) determine the left-hand margin on the paper: 465 is the normal margin stop, and 464 is the final margin stop, against which the carriage abuts when drawn back—*e.g.*, for marginal notes—after use of the marginal release. (*See* Section XV—The Marginal Release—Empire.) Either stop can be moved when its milled surface is pressed, and can then be slid along the bar. To set the stop at any desired position, first place the carriage at the point at which you wish the margin to be set—*i.e.*, where you wish the lines to begin—and then push in the stop (L 465) to the left against the projection on the carriage end. The second marginal stop (L 464) should be set at the point beyond which you do not, in any event, desire to write, even after the use of the marginal release.

Right-hand margin.—(*See* Diagram *F*, p. 23.) The bell-trip (*F* 360) on the graduated bar (*F* 357), at the right-hand end of the carriage in front, should be set so as to ring the bell eleven letter-spaces before the point at which the normal line is intended to finish. At that point the right-hand margin stop will prevent the further movement of the carriage towards the right. The bell-trip can be adjusted to any desired position by pressing on it at its left-hand end, and then moving it. (*See* Section XV—The Marginal Release—Empire.)

MONARCH.—The marginal rail (N 9650), with scale, is located behind the paper-table, and over the carriage bearings. This scale corresponds exactly with the scale in front of the carriage. On this rail are adjustable marginal stops (N 9880, 9885, 9890), which, when set, regulate the length of the writing line at either end. To move these, press the plunger-button at the rear of the marginal stop: this sets the stop free for movement and adjustment. To adjust.—Set the carriage so that the graduation on the platen-scale at which you wish the left-hand margin to stand is at the pointer. Then move the right-hand marginal stop to the left as far as it will go: it will then prevent the return of the carriage to the right beyond the point thus determined. (For instance, suppose you wished to set a 20-margin: set the carriage so that the 20th graduation on the platen-scale is at the pointer: then push the right-hand marginal stop to the left as far as it will go, and your margin of twenty graduations will be set.)

Similarly, to set a margin at the right-hand side of the paper, first push the central marginal stop well to the left of the point at which you wish the normal line to finish: then set the carriage to correspond with the end of the line: then push the central margin stop to the right as far as it will go.

The third marginal stop may be used to determine the point beyond which you cannot extend the writing in any event. It is thus a final marginal stop.

OLIVER.—The marginal stop (V K 2) for the left-hand margin is on the right, just behind the front carriage-rail (V L 2). To set this stop for any particular margin, turn the loop on the end of the marginal stop rod downwards until the catch which holds it in position is released: then move the rod to the right or left, as desired. When the required margin is set, the rod will automatically

return to its proper position: but see that it does so, and also that the release-key (V s 2) works freely, or the paper will not feed up automatically when the carriage is pushed to the right for a new line.

The bell will ring six letter-spaces before the point at which the right marginal stop is set.

REMINGTON.—The marginal stops (X 37662, 37622, 37612, 37652), slide on the marginal stop bar. The latter is graduated to correspond with the markings on the front scale, and all the stops are movable, so that they can be set to begin and end the lines of writing at any point. When the machine is set for full length lines, the writing always commences at the point indicated by 0 on the scale. If it is desired to begin the lines further away from the left side of the sheet, so as to leave a margin down that side of the page, it can readily be done by moving the left marginal stop (X 37622) to the right. To do this, press with the finger on the knurled knob, and move it to the right until the little indicator is exactly on the mark on the graduated scale (X 28473) at which it is desired to begin the writing. (Notwithstanding this "official" instruction, the present writer finds it desirable to set the indicator slightly to the right of the graduation on the scale, not exactly on it. Otherwise, it is apt to slip back one degree the next time the carriage is returned.)

If it is desired to shorten the line at the right-hand end, it is only necessary to set the right marginal stop (X 37612) so that its indicator points to the degree at which it is desired to stop the line. (For the same reason as is given in the immediately preceding paragraph, the writer considers it best to set the marginal stop so that its indicator points slightly to the left of the graduation.)

The bell will ring in accordance with the setting of the right marginal stop—*i.e.*, five or six letter-spaces before the limit of travel determined by the setting of the marginal stop.

ROYAL.—To set the left-hand margin, proceed thus—Place the carriage so that the type-guide (BB 28) indicates the point at which you wish the margin to stand: throw back the reversing paper-table, and slide the left-hand margin stop (CC 35) to the right until it comes against the centre post. Similarly, to set the right-hand margin, place the carriage so that the type-guide indicates the point at which you wish the lines normally to stop; then slide the right-hand margin stop to the left till it comes against the centre post.

L. C. SMITH.—On the marginal rack behind the paper-table are the marginal stops (EE 1 and 4). The one on the left controls the left margin, and the one on the right controls the right margin. The rack is graduated to correspond exactly with the scale at the front of the machine. To change the position of the stops, it is only necessary to press the thumb down on the milled upper surface, and slide them along the rack to the desired point.

SMITH PREMIER.—The swinging rack (GG 18), carrying the margin regulator stops (GG 19), is graduated to correspond with the scale (FF 5). (The rack is made to swing, so that it may be brought over the paper-table for convenience in setting the stops.) Swing the rack forward into the position shown in plate GG : press the milled finger-pieces (GG 20) of the marginal stops, and you can easily move the stops to any desired point, setting them by the tip of the margin regulator (GG 19). Before the machine is operated again, the rack should be swung back into normal position at the rear of the machine. The right-hand margin regulator—*i.e.*, the right-hand one on the machine—regulates the right-hand margin on the paper : the left-hand regulator governs the left-hand margin on the paper.

UNDERWOOD.—The marginal stops (PP 1 and 2) are located towards the front of the machine, so as to be easily accessible. They can be moved to any desired position by means of their handles, which are so constructed that, when the two parts of the handle are pinched together, the stop is disengaged from the rack that holds it in position, and the stop is then free to move in either direction—left or right. The position of the right-hand marginal stop regulates the margin on the left side of the paper : the position of the left-hand marginal stop regulates the margin on the right side of the paper. The warning bell rings six spaces before the point at which the left-hand marginal stop is set.

YOST.—To set the left margin, first move the carriage to the desired starting point. Depress the release of the left-hand adjustable marginal stop (RR P), and slide it to the right, till it comes into contact with the fixed marginal stop (RR Q). To set the right-hand margin—*i.e.*, the point at which the lines should end—first move the carriage towards the left, and bring it to the point where it is desired that the lines should end ; then slide the adjustable line-stop (RR R) to the left, till it comes into contact with the stop (RR Q). The warning bell will ring five spaces before the point where the line thus set is to end. Note that the Yost instruction book calls the marginal stop regulating the right-hand margin a "line-stop," thus distinguishing it from the margin-stop proper regulating the left-hand margin.

NOTE.—It is always advisable to set the paper-guides (or fingers) with regard to the setting of the marginal stops. The right-hand guide, or finger, should be set to the right of the point determined by the right-hand marginal stop. Otherwise, the carriage may be checked by contact of some part of it with the guide, with the result that the characters will "pile." In the case of some machines, unless the margin-stops are set in accordance with the setting of the paper-guides, the types are apt to strike on the guides, to the detriment of both, particularly of the types.

XIV

THE KEYBOARD LOCK

In all machines, a keyboard lock—or line lock, as it is sometimes called—comes into operation whenever the limit set by the stop regulating the right-hand margin has been reached. This locks the whole keyboard, so that it becomes impossible to depress any key. It thus prevents the " piling " of characters at the end of the line of writing—a common annoyance in old-style machines. The line lock can be freed, when necessary—*e.g.*, for the completion of a syllable—by operating the marginal release, as described in the next section.

XV

THE MARGINAL RELEASE

When it is desired to write within the left-hand margin—*e.g.*, for the purpose of making marginal notes,— or to extend the line of writing beyond the point determined by the right-hand marginal stop, it is possible to do so by using the marginal release.

BARLOCK.—To write within the left-hand margin, press the key marked " M.R." with the right hand, before pushing the carriage to the right with the left hand.

Similarly, to pass the right-hand margin, press the same " M.R." key. The " M.R." key is near the front right-hand corner of the keyboard.

EMPIRE No. 1.—Normally, the buffer (J 58B) arrests the return of the carriage towards the right at the point corresponding with its setting (Section XIII—The Marginal Stops. Empire No. 1). For marginal writing, in returning the carriage for a new line, press the curved lip (J 58A) on this arm backwards. The arm will swing freely out of the way, and allow the carriage to return farther to the right, till stopped by the buffer on the main part of the stop. The marginal notes can then be written.

Right-hand Margin.—The normal right-hand margin is determined by the type-locking device, regulated by use of the type-lock key, in conjunction with the bell-trip and small scale connected with the right-hand side of the carriage, and a small lever underneath the cover of the machine, which throws the type-lock out of action, when desired. If the bell-trip (F 152) is set at 80—as will be appropriate for ordinary full-width work—the types will lock at a point about four letter-spaces before the end of the aforesaid scale is reached. If it is then desired to write two or three letters in that margin to complete a word, press the button, and the lock will be released, so that the additional characters can be written. If the operator prefers to throw the type-lock out of action, so that it will only lock the types at the extreme end

of the scale, the bell-trip should be set at 77, and the type-lock should then be thrown out of play by pressing in the lock-key, the little lever underneath the cover being reversed so as to catch on a projection on the extension of the lock-bar. It will not then be necessary to touch the button at all.

EMPIRE No. 2.—To write within the left-hand margin, the stop (L 465) may be swung out of the way of projection A by pressing the push-button (K 469) on the front of the main frame centrally below the keyboard. The carriage will then be free to travel till it comes against stop L 464, which should have been previously placed so as to correspond nearly with the left-hand edge of the paper This is the final marginal stop on the left-hand side.

Right-hand margin.—After the bell rings, eleven characters may be written before the keyboard lock prevents further impressions. If the key marked "T.L." (K 626) is then pressed in, seven more characters may be written before the keyboard is finally locked at the limit of the carriage travel. Should the operator prefer not to have the keyboard-lock come into operation until the limit of the carriage travel has been reached, and to rely upon the signal of the warning-bell, the "T.L." key should be pressed in, and the hold-out handle (K 630) pushed to the right. The keyboard lock will then not come into operation until eighteen characters have been written after the bell has rung.

MONARCH.—Press the key marked "Margin Release" (M 9935), in front of the machine, and above the "Tab. Key" (M 7560). The carriage can then be moved outside the range set by either margin stop.

OLIVER.—If the key marked "Left"—above the right-hand end of the keyboard—be depressed, the carriage can be pushed to the right, so that it becomes possible to write in the left-hand margin. To write beyond the limit of the right-hand margin, depress the key marked "Right."

REMINGTON.—Press the marginal release (X 37540), and the carriage will be free to move past either marginal stop, up to the points determined by the final marginal stops (X 37652 and 37662). For description of the purpose of these final marginal stops, see later paragraph in this section.

ROYAL.—When margin-release key (BB 14) is held, the carriage can be drawn past both right and left margin stops, or will move past the right-hand margin stop when the keyboard is operated in the usual way.

L. C. SMITH.—The margin release key (DD 4) is at the upper right-hand corner of the keyboard. When it is pressed, additional characters may be written to the right of the right-hand margin stop, even when the stop is at the extreme limit of the scale. Similarly, writing may be done to the left of the left-hand margin stop.

SMITH PREMIER.—Press the margin release key (FF 9) at the bottom right-hand corner of the keyboard, and the carriage will pass either the right or left margin stop. This key looks like a short space-bar.

UNDERWOOD.—One marginal release key (PP 12) is in front of the extreme right of the carriage. Depression of this will make it possible to write in the left-hand margin. The other marginal release key (PP 13) extends from the front of the main frame on the left-hand side. Depression of this key will render it possible to extend the normal line of writing towards the right. (It is unnecessary to hold this key: a touch on it frees the carriage for any number of spaces up to the limit of the full writing line.)

YOST.—The marginal release key is situated at the right-hand upper corner of the keyboard. Its depression frees the carriage from the limitations of either marginal stop. In the No. 15, two additional adjustable stops are provided, one for the left-hand margin, and one for the right. The No. 15 Yost is, therefore, similar to the Remington in this respect.

It will be noticed that some of the machines have extra, or final, margin stops, in addition to the regular margin stops. For some classes of work, these are a convenience. For instance, suppose that we are dealing with the left-hand margin, and want to write a series of marginal notes, each beginning at a regular point. We set the left-hand final marginal stop at that point, and when we return the carriage to the right, and press the marginal release key, we pass the regular marginal stop, and the carriage is stopped by the final marginal stop. Similarly with the right-hand marginal stop. Suppose we want to have the safe-guard of the regular right-hand marginal stop, and yet desire to extend our line of writing occasionally, but want to be checked before we reach some given final point (perhaps because we are writing on paper of less than the full width of the cylinder), we set the final right-hand marginal stop so that it shall be impossible, in any event, to extend the line beyond the fixed point which it represents.

The adjustment of the final marginal stop is exactly similar to that of the regular marginal stop; but operation of the marginal release will not permit you to pass it. It is "final."

XVI

ACCOMMODATING PAPER OF DIFFERENT WIDTHS, ENVELOPES, CARDS, ETC.

In all cases, (except those of the Barlock, Empire No. 1 and the Royal), set the paper fingers, or paper guides, so that both edges of the paper are held by them. (*See* Section X—Inserting the Paper.) Set the marginal stops so that it becomes impossible to write beyond the edges of narrow paper, or of envelopes, or of cards, when

in use. (This is unnecessary in the case of light envelopes when it is a question of addressing only a few, but when it is a question of addressing a number, it is well worth setting the marginal stops accordingly. (*See* Section XIII—The Marginal Stops.)

The above instructions need to be supplemented in the cases of the various machines.

BARLOCK.—A quick way of inserting envelopes or postal cards is to lift the scale with the little finger of the left hand, and, with the thumb and forefinger of the same hand, insert the envelope or card at the top of the platen under the feed-roll holder, rotating the platen-wheel towards the front of the machine with the right hand.

EMPIRE No. 1.—*See* Section XIII.—The Marginal Stops. Empire No. 1.

EMPIRE No. 2.—All paper, wide or narrow, should be inserted centrally on the cylinder, and the marginal stops adjusted to suit. Paper-guides (K 401 A and 401 B) are provided, which are principally useful for writing on cards, small labels, etc., of narrow width. These paper-guides can be set to suit the width of the cards or labels, by moving them right or left, so that the distance between them shall be rather less than the width of the material to be written on. There is a small projection on the outer edge of each, and this projection is used as a handle for moving the guide to the positions desired. The marginal stops should be set to correspond. This is particularly important in the case of the marginal stop governing the right-hand margin: if not properly set, there is nothing to prevent the types striking on the right-hand paper-guide—except, of course, the operator's watchfulness. The due setting of the marginal stops renders this physically impossible.

MONARCH.—When narrow paper, cards, or envelopes, are being used, it is advisable to move the right paper-finger (M 10761) far enough to the left to hold them securely, while the left paper-finger (M 10766) should remain to the left of the 0-mark on the platen scale.

For writing on cards, or other stiff material, set the adjustable paper-fingers to catch the edges of the card, and add pressure to the card-holder (M 6605), by pressing upwards the two small fingers (M 6360 B), projecting forwards from the slide-lock (M 6360). When not in use, the card-holder should always be made inoperative by pushing down the two small fingers just mentioned.

OLIVER.—To insert bulky envelopes, thick cards, or a very thick set of papers and carbons, raise the lever (P F) at the end of the carriage. This throws the feed-rollers (Q K) away from the platen and thus facilitates insertion. After use, depress the lever to its original position. Should the feed still prove obstinate, press downward on the little handle (P S) on the left-hand of the carriage, and behind

the ratchet wheel P H. This pushes the feed-rolls closer to the platen, giving a firmer grip and more certain feed.

The paper-fingers (P L) on top of the platen can be moved any distance to suit any width of paper. They should be so set that their outer edges correspond with the outer edges of the sheets to be written on, and should not be subsequently disturbed until a different width of paper is used. After setting these paper-guides, care should be taken to arrange the marginal stops (Q D and V K 2) so that the types cannot strike the paper fingers.

Stiff cards, or extra heavy envelopes, may be forced between the lower-feed rolls and platen by a slight downward pressure on the little handle (P S) on the left-hand end of the carriage, and behind the ratchet-wheel (P H). This pushes the feed-rolls closer to the platen, and thus makes it easy to feed cards of unusual thickness.

REMINGTON.—The machine is fitted with two paper-fingers (or paper-guides) (**X 33901** and **X 33891**), and a central line-gauge (**X 26964**), which render it an easy matter to arrange for any width of paper, or any size of envelope. (*See* Section X—INSERTING THE PAPER.) When using *very* narrow paper, cards, or envelopes, it is advisable to insert them centrally on the cylinder, and to bring up the paper-guides and marginal stops to correspond. Otherwise, the central line-gauge is likely to catch the edges of the paper, or card, when the carriage is being returned.

ROYAL.—Paper up to eleven inches in width may be used on the No. 10 without making any adjustment except of the marginal stops. No adjustments are needed for envelopes, unless very stubborn, when they should be treated as cards.

When writing on cards, see that the rolls on the bail (**BB 34**) are both so placed that they bear on the card. The bail need not, however, necessarily be used except when the writing is approaching the foot of the card. The card-holding points (**BB 26** and **29**) should be in an upright position, to hold the card securely against the cylinder. Except for cards and stubborn envelopes, the card-holding points may be dropped away from the cylinder, by touching the latch (**BB 31**), and the corresponding latch on the right side.

L. C. SMITH.—To write on narrow cards, it is only necessary to draw the paper-fingers sufficiently close together to hold the card properly. The extreme edges of the card—top, bottom, right, and left—may then be written upon without difficulty, as the auxiliary feed-rolls on the paper-fingers hold the card firmly, even if it has passed out of the paper-feed proper. In addressing ordinary envelopes, it is not necessary to bring the paper fingers together. Either paper-finger will hold the envelope satisfactorily.

SMITH PREMIER.—No special instructions are necessary.

UNDERWOOD.—For writing on cards and envelopes, use the envelope-guide—a pivoted arm just behind the scale indicator. To bring it into use, simply turn it round so that its wheel lies against the cylinder. In inserting cards or envelopes when using the envelope-guide, take care to direct them properly behind the guide. Turn the guide back out of the way when not needed. It may be turned in either direction towards you. (OO 9).

YOST.—No special instructions are needed.

XVII

THE SHIFT-KEY

With the exceptions of the Barlock and the Smith Premier, all the machines with which we are dealing are shift-key machines.

Of the other eight machines, six are single-shift machines, and two are double-shift machines. The six single-shift machines are the Monarch, Remington, Royal, L. C. Smith, Underwood, and Yost. The two double-shift machines are the Empire and the Oliver.

The double keyboard machines have, of course, just as many separate characters as there are keys in the keyboard. The single-shift machines have twice as many characters as there are keys in the keyboard. The double-shift machines have three times as many characters as there are keys in the keyboard.

In the Monarch, L. C. Smith, and Yost No. 20, the type-basket is shifted by the action of the shift-key: in the Empire, Oliver, Remington, Royal, Underwood, and Yost No. 15, it is the cylinder that is shifted. So far as manipulation is concerned, it makes no difference which mechanical method is adopted.

The method of operating the shift-keys is so well known that it is unnecessary to devote much space to its description here. (See *Pitman's Typewriter Manual.*) It should, however, be borne in mind in all cases that the shift-key must be held fully depressed while the required character is being written.

In all the single-shift machines, the shift-key is in duplicate, there being one at each front corner of the keyboard. In the cases of the double-shift machines, the following special instructions apply—

EMPIRE No. 1.—The shift-keys (E and J 69) are placed at the left of the keyboard. Instructions given as applicable to the Empire No. 2 also apply to the Empire No. 1, except that on the No. 1, while the full-stop is set in all three cases, the comma appears in only the upper-case and "Caps." case.

EMPIRE No. 2.—The shift-keys (K 678 and 684) are located at the left of the keyboard. Depression of the shift-key marked "Caps," sets the platen in position for writing capitals, or "upper-case" letters. Depression of the shift-key marked

"Figs." sets the platen in position for writing the figures and miscellaneous signs. The comma and the full-stop are represented in all three cases, or shift positions.

OLIVER.—The two shift-keys are in duplicate—there being a "Cap." and "Fig." key at each end of the keyboard.

XVIII

THE SHIFT-LOCK

THE shift-lock is used whenever it is desired to hold a shift-key continuously depressed. This device varies, both in position and operation, in different machines.

EMPIRE No. 1.—Either shift-key may be locked by pressing the latch (E and J 74) till it engages the hook (E and J 70) on the lever below. To release it, simply press the shift-key previously locked, without touching the latch.

EMPIRE No. 2.—While the appropriate shift-key is held down, depress the shift-lock (K 694), at the left-hand front corner of the keyboard. To release it, simply press the shift-key previously locked, and release it without touching the shift-lock.

MONARCH.—The shift-lock (M 3110) is to the left of the top row of character keys. It is unlocked by lightly pressing the left shift-key (M 3030).

OLIVER.—Depress the appropriate shift-key, and then pull the little shift-lock lever between the shift-keys. Release the lock by moving the shift-lock lever back to its normal position. There is a separate shift-lock for each shift-key.

REMINGTON.—The shift-lock (X 17520) is directly behind the left shift-key. If depressed, it sets the machine for continuous upper-case: it is not necessary to depress the shift-key first. To unlock, press the left shift-key lightly.

ROYAL.—The shift-lock (BB 9) is in approximately the same position as on the Remington, and is depressed in the same way. To unlock it, press either shift-key.

L. C. SMITH.—The shift-lock (DD 31) is in the upper left-hand corner of the keyboard. To unlock, press the left shift-key.

UNDERWOOD.—The shift-lock (PP 11) is behind the right-hand shift-key. To unlock, press the left shift-key.

YOST.—Position and actuation are the same as on the Remington.

XIX

THE CARRIAGE RELEASE

THE carriages of most machines can be moved freely to the right, by simply pulling or pushing them. To move them to the left, it is necessary to operate the carriage release mechanism, which differs in position and actuation in different machines.

BARLOCK.—Hold the large lever (A 239) between the thumb and forefinger of the left hand, push the short lever (A 422) inwards with the second finger, and the carriage will remain at any point to which it is moved, when the small lever is released.

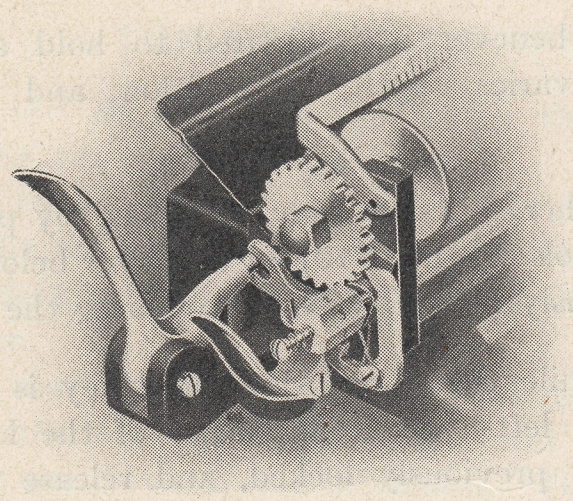


Diagram *G*

CARRIAGE RELEASE (BARLOCK)

EMPIRE No. 1.—The free movement of the carriage in *either* direction—left or right—is obtained by depressing the carriage release-key (G 53). This key should be held up with the third finger of the left hand, the first and second fingers being at the same time held against the line-space lever (E or G 41). The carriage can then easily be slid to any desired position. In the ordinary operation of returning the carriage for a new line, the key (G 53) may be similarly held up, thus obviating the click of the escapement mechanism. Care should, however, be taken to release the key (53) as soon as the carriage is arrested by the marginal stop, before releasing lever (41).

EMPIRE No. 2.—The free movement of the carriage in *either* direction—left or right—is obtained by depressing the carriage release key (K 350). This key should be held with the thumb of the left hand, the second and third fingers being at the same time held against the lower part of the line-space lever (K 409). The carriage can then be slid easily to any desired position.

MONARCH.—This machine has two carriage release keys (M 5275, 5270), one at each end of the carriage. When either is depressed, the carriage is free for movement to the left.

OLIVER.—The carriage has free motion. To move it to the left, seize the big knob (P A) between the thumb and the first and second fingers of the left hand, and, while the third finger presses on the release-key (P C), pull carriage to the left. Thus held, the carriage is under complete control, and can be stopped at any point by withdrawing the third finger from the release-key. There is a duplicate release (P T) at the right-hand end of the carriage. To operate it, pass the forefinger well behind the knob (P B), and press. Release the lever *towards* you.

To move the carriage to the right, press with the middle finger of the left hand on the lower button or knob (P C) at the left. The carriage is stopped at any desired point by placing the first finger of the left hand on the upper button or knob (P A), at the same time that the middle finger is removed; or press with any finger of the right hand upon the right-hand release-key (P T), which will also permit the carriage to be moved to the right or left.

REMINGTON.—Has two release-keys, or release-levers (X 28051 and 28052), extending beyond the right and left-hand corners of the carriage. Operation and effect are the same as with the Monarch.

ROYAL.—The two release-keys are BB 1 and 21—one being close to the left-hand thumb-wheel, and one close to the right-hand thumb-wheel.

L. C. SMITH.—There is a carriage release-key (DD 14 and 25) on either side of the carriage, close to the platen knobs, and slightly in front of them.

SMITH PREMIER.—The two release-levers are numbered FF 10. Position approximately as in the Royal.

UNDERWOOD.—The right-hand carriage release-key (OO 14) extends from the upper right side of the carriage, in front of the cylinder-knob. To operate it, place the right thumb against the handle or thumb-piece (OO 12) on the right-hand side of the carriage, and depress the release-key with one of the fingers of the right hand. The left-hand carriage release-key (MM 4) extends from the upper left-hand side of the carriage, in front of the cylinder-knob. To operate it, depress this key with the forefinger of the left hand, holding the carriage steady with the thumb and second finger.

YOST.—The carriage release-lever (QQ G) is above the left-hand platen thumb-wheel.

XX

BEGINNING A NEW LINE

In most cases, the method of beginning a new line is practically the same, when operating any of the machines under survey. The carriage is returned to the right by means of the line-space handle, or lever. This has a double function: it acts,

in the first place, as a handle by means of which the carriage can be returned; but, in the second place, it is so constructed that, when used to return the carriage, it spaces the paper up for a new line.

There are two main forms of this part of the machine. It is sometimes a push-lever, set on the left-hand side of the carriage; and it is sometimes a pull-lever, set on the right-hand side. On the Barlock, Empire, Monarch, Oliver, Royal, L. C. Smith (but only by special arrangement with the makers in this case), and Underwood, it is a push-lever. On the Remington, the standard form of the L. C. Smith, the Smith Premier, and the Yost, it is a pull-lever, on the right-hand side.

More exact description of the location of the lever is given in the following directions—

BARLOCK.—A 239.

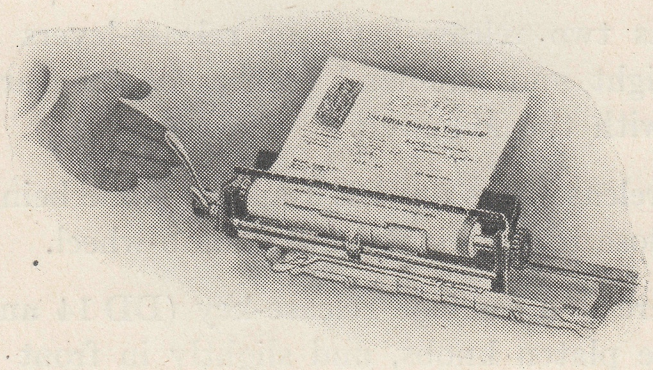


Diagram *H*

RETURNING THE CARRIAGE (BARLOCK)

EMPIRE No. 1.—Place the forefinger of the left hand against the spoon-shaped line-space lever (E and G 41), pressing the carriage firmly to the right as far as it will go. The platen is rotated for the new line at the same time, and its proper position is assured by taking care that the lever (41) is pressed to the right till it rests against the ratchet wheel line-lock (E, G, 47) on the end of the platen, forcing the lock firmly into the teeth.

EMPIRE No. 2.—Place the forefinger of the left hand against the spoon-shaped line-space lever (K 409), at the same time pushing downward with the left thumb the push-button (K 350), and moving the carriage firmly to the right as far as it will go. The push-button should then be released before the spoon-shaped lever is allowed to return to normal position.

MONARCH.—M 11500.

OLIVER.—Push the carriage to the right by pressure on the upper knob (P A) at the left of the carriage. A slight resistance will be felt as the carriage gets within an inch or so of the limit of its travel. This resistance is occasioned by the turning of the platen for the new line.

REMINGTON.—X 34004.

ROYAL.—BB 2.

L. C. SMITH.—DD 6.

SMITH PREMIER.—FF 6

UNDERWOOD.—OO 11

YOST.—QQ 1

XXI

ADJUSTING THE LINE-SPACING

ALL the machines now under survey (except the Empire No. 1) can be so adjusted as automatically to give three different widths of line-spacing whenever the carriage is returned to the right by use of the line-space lever, as described in Section XX. (The Empire No. 1 provides for two line-space widths.) The methods of adjustment are as follows—

BARLOCK.—When the carriage is returned by means of the line-space lever, the paper feeds up automatically either one, two, or three widths, as may have been determined by the previous setting of the gauge. If one, two, or three line spaces are wanted, this gauge is turned between the finger and thumb until the indicator figures, 1, 2, or 3 respectively, come uppermost.

EMPIRE No. 1.—Two widths of line-spacing are provided—variable by rotation of the knurled head eccentric disc (G 43) to either of its alternative locking positions.

EMPIRE No. 2.—Three widths of line-spacing are provided. They are regulated by the knurled dial (K 431), which bears figures indicating the three different widths. By pulling the dial slightly forward, it may be rotated so as to bring the desired finger to the index point above the dial. When 1, 2, or 3 is there, the machine is set respectively for single, double, and triple spacing.

MONARCH.—Directly under the line-space handle is the line-space gauge (M 11530)—a plunger button, which governs the spaces between lines, being inserted in one of the three holes behind it. Pull the gauge, or button, towards you, and insert it in the hole to the left for writing single-spaced, or close, lines: insert it in the middle hole for writing double-spaced lines, and in the right hole for triple spacing.

OLIVER.—Single, double, or triple line-spacing is secured by pulling forward the thumb-piece (Q G), which will be found at the left end of the carriage, in front of the ratchet-wheel (P H), and moving it up or down until the required notch, as indicated by its number, is over the pin in the side-plate of the carriage under the ratchet-wheel (P H).

REMINGTON.—The three different widths of line-spacing are regulated by the line-space gauge (Y 35531). When the little knurled thumb-piece of the gauge is lifted up and pulled forward as far as it will come, the machine is adjusted for the widest spacing, equal to three notches of the cylinder-ratchet. When it is set in the central groove, the spacing equals two notches of the cylinder-ratchet: and, when it is set in the groove farthest from the operator, it is adjusted to the narrowest spacing—one notch.

ROYAL.—To change width of space between lines, move the adjustable handle (BB 3) until the pointer indicates 1, 2, or 3, for respectively single, double, or triple spacing, as may be desired.

L. C. SMITH.—The line-space regulator is at the right-hand end of the carriage, and has a milled thumb-piece by which the mechanism can be set to space either 1, 2, or 3 spaces. This thumb-piece (DD 13) has the figures 1, 2, and 3 on it, and can be so turned that one of those figures, according to the number of spaces desired, comes round to the side opposite the operator, and nearest the platen.

SMITH PREMIER.—When the line-space lever pin (GG 11) is inserted in the rearmost of the three holes made to receive it, single line-spacing results: when the pin is in the centre hole, double line-spacing results: when the pin is in the front hole, triple line-spacing results.

UNDERWOOD.—When the line-space adjusting lever (MM 2) is set at the indicator figure 1 on its plate, the use of the line-space lever will automatically make a single line-space: if at 2, a double space: if at 3, a triple space.

YOST.—The line-space adjust (QQ H) is at the right-hand end of the carriage. 1, 2, or 3 spaces, as desired, can be obtained by turning the adjust, the spacing being clearly indicated by a figure coming into view as it is turned.

XXII

VARIABLE LINE-SPACING

It is sometimes desirable to depart from the regular line-spacing, as determined by the teeth of the cylinder ratchet—*e.g.*, for corrections, interlineal additions, writing on ruled lines, etc. Writing on *any* horizontal line is rendered possible by the use of a device generally known as the variable line-spacing mechanism, but also called by other names, such as platen-release, variable line-spacer, space release knob, variable line-spacing lever, etc. The following directions will indicate the setting and actuation of this mechanism on the various machines—

BARLOCK.—Push in the stud (A 236) on the gauge (A 235) with the fore-finger of the left hand. The platen will then be free from the control of the

ratchet detent, so that it will be possible *e.g.*, to bring any ruled line to the edge of the lock-plate (A 248), and write in accurate register. To return to the normal ratchet-spacing, depress the gauge, and the stud will be released.

EMPIRE No. 1.—Turn the small lever at top of line lock (E or G 47) so as to throw the small arm against the inside of the platen ratchet wheel: then turn the platen by the hand-wheel (F 39) to proper register for each line, indicated by the notch (J x).

EMPIRE No. 2.—Turn the line-lock (K 420) out of engagement with the lever (K 424) which is provided for the purpose, and the platen will then be free from the ratchet-spacing, so that it can be turned for any desired distance by the hand-wheel. The line of writing must be set to coincide with the ledge (K 403 B) at the right-hand side of the support of the front type-guide (K 601).

MONARCH.—Draw forward the variable line-spacing lever (M 12205)—the lever between the end of the platen and the line-space handle shaft. The platen may then be turned by the platen thumb-twirlers, without regard to its regular ratchet-spacing, until the line, or spot, upon which you wish to write comes to the edge of the line indicator. If only one ruled line is to be written on, the variable line-space lever may be returned to its original position, and the printing point will remain on that line: but, if several ruled lines are to be written on, it is well to let the lever remain forward, turning the platen from line to line by the thumb-twirlers. Before attempting to write again on blank paper, the machine should be re-adjusted to its regular line-spacing, by returning the variable line-space lever to its original position.

OLIVER.—There are two different ways of actuating the variable line-space mechanism on this machine. The first way is simply to throw the lever (P E), at the left end of the carriage, backward until the pawl (P J) is disengaged from the teeth of the ratchet-wheel (P H). While the pawl is so disengaged, the platen can be turned to any point irrespective of the ratchet, so that it is possible—*e.g.*, to interline. Upon return of the lever (P E), the pawl re-engages the ratchet, and the original line of writing can thus be accurately found again. It is often important to be able to secure accurate registration of the platen in regard to work previously written, and the method of actuation described in this paragraph ensures this.

If, however, the lever (P E) at the left-hand end of the carriage is drawn forward, and held firmly, it locks the pawl (P J) in the ratchet-wheel (P H), and, while it is thus locked, the platen can be turned to any position or line, independently of the positions normally determined by the ratchet teeth. When the pawl is released, the ratchet does not in this case secure the return of the writing lines to their original positions. (See note at end of this section.)

REMINGTON.—Push in the right thumb-wheel (Y 31671), thus throwing out of action the spacing ratchet (Y 30370), and, while the thumb-wheel is held in, turn the cylinder to the exact position which will enable you to write on a given line. When the hand is removed from the thumb-wheel, it will spring to the right, thus throwing the ratchet into action again. If it is desired to use the variable line-spacing mechanism for writing several lines in sequence, push in the right cylinder thumb-wheel as far as it will go, and then lock it in place by pulling over the little lever (Y 30521) with the thumb, so that it catches over the flange on the hub of the thumb-wheel. This holds the cylinder ratchet permanently out of action. When the catch is released, the thumb-wheel springs back, and the line-spacing ratchet is once more operative. In the actuation of the variable line-space mechanism, the line-space lever is not used, the paper being turned to the desired writing point by means of a thumb-wheel.

ROYAL.—Move line-space release knob (BB 4) back. Turn cylinder until line to be written on is exactly at top of line scales (BB 25 and 30). The writing will then appear on the line. When finished with ruled line work, do not forget to move knob (BB 4) forward again to re-engage spacing mechanism for regular work.

L. C. SMITH.—The variable line-spacer is operated by pushing in the right-hand platen knob (DD 16). When thus pushed in, the knob stays in till released, so that the line-spacing can be varied at will simply by turning the platen-knobs to the extent required by the particular work in hand. To release, push in the left-hand platen knob.

SMITH PREMIER.—Press in, and hold, the push-button (GG 12) projecting from the centre of the right-hand platen-knob, and the platen may be turned independently of the ratchet, and the paper brought, either forwards or backwards, to the exact point desired. (Removal of the finger from the push-button frees it, and it springs out, thus throwing the ratchet into action again.) Space up one line, and the bottom of the letter next to be written will fall exactly on the line brought to the edge of the scale. If it is desired to lock the variable line-space mechanism, press in the push-button as far as it will go, and then give it a slight turn towards the back of the machine. To unlock, turn it forward again.

UNDERWOOD.—Pull out the push-button (PP 4 a) towards the left, and turn the cylinder to the desired place. To restore to normal position, hold the cylinder firmly with the right hand, and press the push-button back again.

YOST.—The platen release is at the end of the right-hand platen thumb-wheel, and when this is pushed in with the forefinger, the platen can be turned independently of the line-spacing mechanism. To lock this release, on the No. 20 model, after pressing it in, turn slightly to left or right, and on the No. 15 model, depress the lock bolt on

the edge of the thumb-wheel. To bring the regular line spacing mechanism into operation, on the No. 20 model, turn the platen release to left or right, and on the No. 15 model, depress it.

NOTE.—There are two forms of the variable line-space mechanism. The Oliver has them both, and perusal of that portion of this section dealing with that machine will enable the reader to grasp the difference between them. By the first method the ratchet still determines the position of the platen in regard to the line of writing, when the adjusting mechanism has been released. The second form permanently changes the relation of the position of the platen to the ratchet, and the two can only be restored to their original relative positions by special and careful manual adjustment.

This second form of variable line-space mechanism is of great value altogether irrespective of the main purpose for which it was devised—to enable the operator to write on any desired line: it changes the surfaces of the cylinder on which the writing lines fall. This means that the type blows do not fall for ever on the same parts of the platen—as they do, unless the platen can be moved independently of the ratchet. With any machine fitted with this second form of variable line-spacing, therefore, the operator should make a point of using it occasionally, even if nothing in the writing calls for it. It can, of course, be adjusted with or without paper in the machine.

XXIII

THE BACK SPACER

THIS device is useful whenever it is a question of moving the carriage backwards to the right for a short distance. In such a case, the carriage can always be returned much more quickly and accurately by means of the back spacer than by simply pulling or pushing it back.

To illustrate.—In typing, one often drops a letter, leaving a blank space where the character should be. With the aid of the back spacer, the carriage can be accurately and quickly returned to the point for the insertion of the missing letter, providing it is not more than a few spaces back. Even where it is some distance back on the same line, the back spacer is useful in the final adjustment of the carriage to the right spot, after the carriage has been set back by means of the carriage release to "somewhere about right."

The device is also serviceable in connection with certain kinds of tabulation. (*See* Section XXXII—TABULATION.) It also helps in some kinds of corrections. (*See* Section XXIV—CORRECTIONS.)

The operation of the back spacer is the same on all machines. The back space key is pushed down—not tapped down—and released. Its position, however, differs on different machines.

BARLOCK.—The back-space lever (A 6) is at the left of, and in front of, the cylinder.

EMPIRE No. 1.—Has no back-spacer.

EMPIRE No. 2.—On this machine, the back spacer is "officially" called the "space back." It is at the right hand side of the top row of keys (K 474).

MONARCH.—(M 13550). At the right-hand end of the upper row of keys in the keyboard proper.

OLIVER.—A hooked finger lever (V Y 2) projects outward from the extreme right-hand side of the machine, just in front of the carriage.

REMINGTON.—(X 13811). At the upper right-hand of the keyboard.

ROYAL.—(BB 8). At the top left-hand corner of the keyboard.

L. C. SMITH.—(DD 5). At the right of the row of decimal tabulator keys, not far from the right-hand top corner of the keyboard proper.

SMITH PREMIER.—(FF 13). At the bottom left-hand corner of the keyboard. It looks something like a small space-bar, being oblong, and lies to the immediate left of the space-bar proper, thus "balancing" the marginal release key.

UNDERWOOD.—(OO 18). At the top left-hand corner of the keyboard, at a slightly higher level than the other keys.

YOST.—Towards the top left-hand corner of the keyboard, to the left of the Q-key.

XXIV

CORRECTIONS

For full discussion of this subject, the reader is referred to *Pitman's Typewriter Manual.* It is obviously more particularly concerned with the practical use of the machine, and therefore belongs to that book rather than to this. Here we propose to deal only with such points as are closely related to the mechanical devices on the various machines, and which are called into play in making corrections.

When a correction has to be made, it is a simple matter to bring the paper to the right position, make the erasure, and insert the correction. References to Sections X—Inserting the Paper, XI—Adjusting the Paper, XII—The Printing Point, and XXII—Variable Line-Spacing will indicate the nature of the different operations required. The user of a No. 11 Remington should also read Section XXXVI—The Remington End-Guides.

The following points are of importance in this connection—

(1) In turning the cylinder (with the paper) backwards for the purpose of

reaching the line in which the correction has to be made, it is best to lay the fingers lightly on the middle of the sheet. Otherwise, the paper is apt to get crumpled towards its right and left edges.

(2) When making a correction involving an erasure, it is best to apply the eraser towards, or on, the top of the cylinder; otherwise, some of the mechanism is pretty sure to get in the way of the rubber. If the writing is approaching the bottom of the sheet, and it is therefore impossible to roll the paper upwards without getting the sheet out of the feed-roll control, it is best to shift the writing point either towards the extreme right, or towards the extreme left, of the machine. The erasure can there be made without hindrance from surrounding mechanism, but that position is not so convenient for application of the rubber.

(3) Do not forget that eraser dust in the vitals of the machine is bad for "the parts affected." Brush, or blow, it away, therefore, as soon as it is formed. (*See* also advice in Section VII—Preventing and Removing Dirt.)

(4) Remember that eraser dust helps to fill the types, especially in the case of the Yost. (*See* Section IX—Cleaning the Types—Yost.)

(5) A correction needed immediately after the wrong character has been printed, or after a letter has been missed, simply means replacement of the carriage by means of the back spacer. A correction to be made on the line of writing some few words back involves use of the carriage release. A correction to be made in some previous line of writing means turning back the cylinder till the line is found. A correction to be made on a sheet of paper that has been removed from the machine is much more troublesome. Replace the paper with its right and left-hand edges as nearly as possible in their previous positions. (If the paper-guide has been used, this will simplify matters.) Then find the line of writing by turning the cylinder. If paper is not straight, adjust it. When straight, careful use of the variable line-space mechanism will enable you to find the writing line accurately. You may still have to get the characters into lateral registration—*i.e.*, into such positions that each is bisected by a cylinder-scale graduation: in that case, use the feed-roll release, and adjust the paper laterally, taking care not to disturb the horizontal adjustment.

On one machine, the Smith Premier, the actuation of the mechanism for the purpose of making an erasure is somewhat different from that required in the case of any other machine. The following directions are therefore given—

(1) With A (or foolscap) carriage machines.—First rock the platen back by pressing the concave thumb-piece (FF and HH 14) with the thumb or forefinger of the left hand, and erase with the right. This brings the line of writing away from the machine, and presents a firm and convenient erasing surface. It is not necessary to move the carriage, or to turn the platen, or to disturb the paper in any way.

(2) With B, C, D, E, F (wide carriage) machines.—The platens of these

machines are provided with a drop front, which is released by raising the platen by the thumb-lever at the left hand, and then throwing the front rod out and downward with the forefinger. The front of the platen is then entirely clear for the purpose of making erasures.

In all cases, eraser dust, on the Smith Premier, falls to the rear and away from all mechanism through the top-plate chute.

XXV

THE RIBBON

ALL the machines here described are ribbon machines, except the Yost, which has a pad. (This will be dealt with later, in Section XXVIII.)

All the nine ribbon machines, except the Empire, can be fitted with either a single-colour, or a two-colour, ribbon. If a single-colour ribbon is used, it provides two separate tracks, or writing surfaces. Either track (whether for one-colour, or two-colour, work), can be brought into position by actuation of the appropriate mechanism. This mechanism differs, on the various machines, both in location and manipulation.

BARLOCK.—The one-colour ribbon, when used, is sufficiently wide to give two writing tracks. When one of these tracks is exhausted, the spools should be changed from one shaft to the other, which will bring the second track into writing position. (*See* Section XXVII—PUTTING ON A NEW RIBBON—BARLOCK.)

When a two-colour ribbon is in use, the change from one colour to the other is made by pushing the switch-lever (C 429) to the appropriate position. This same switch can, of course, be used to bring the second half of a one-colour ribbon into play, but it is best to act on the instructions in the paragraph immediately preceding this.

EMPIRE No. 1 AND 2.—Neither model is fitted with a two-colour ribbon device, but, if it is desired to write in some alternative colour, a piece of carbon paper of that colour can be slipped temporarily between the platen and the front type-guide. In both models, the ribbon is sufficiently wide to provide two writing tracks. When one is exhausted, remove the ribbon spools, invert them, and exchange them from one spindle to the other. The lower edge of the ribbon will then be brought uppermost, and the second track will be interposed between the types and the paper. In the case of the No. 1, it should be seen that both spools revolve freely on their studs without friction. In the case of the No. 2, when placing the ribbon reels on their spindles, should they stop on top of the ribbon feed pawl, give the right-hand reel a slight turn to the right, and the left spool a slight turn to the left, after which the retaining nuts (K 523) should be screwed into place.

MONARCH.—The two-colour ribbon mechanism is controlled by a lever (M 6565) in the upper right-hand corner of the front plate, just under the top plate. There are four notches into which this lever can spring. If a single-colour ribbon is used the lever should always be in the right-hand notch, when the whole surface will automatically be brought into use, thus obviating waste. When a two-colour ribbon is used, and it is desired to write with the upper half of the ribbon, this lever should be in the next notch. For writing with the lower half of a two-colour ribbon, the lever should be in the next notch. The purpose of the fourth notch is explained in Section XXXI—Stencil Work, Monarch.

OLIVER.—This machine is normally fitted with a single-colour ribbon. If it is desired to use a two-colour ribbon, the fact must be mentioned when the machine is ordered, as the mechanism needed to accommodate it differs slightly from the regular mechanism. No special instructions are required with regard to the one-colour mechanism and ribbon other than those given in the Sections XXVI—The Ribbon Reverse; XXVII—Putting on a new Ribbon, and XL—Ribbon Widths —Oliver.

When, however, the machine is fitted with a two-colour attachment, the following instructions apply—

See Diagram *N*, p. 53. Normally, the writing is in the colour of that section of the ribbon that lies nearest the keyboard. If the metal button AA is pressed, and moved to position indicated as RR, the matter written will be in the colour of the section of the ribbon lying farthest away from the keyboard.

When the machine is fitted with a two-colour attachment, but a single-colour ribbon is in use, the button AA enables the operator to shift the wearing surface from BB to RR, or *vice versa*, so that both tracks may be used up.

REMINGTON.—With the ribbon mechanism as regularly set, the writing is in the colour of the upper part of the ribbon. That is the case when the pointer of the ribbon position indicator (X 27961) is turned to the black spot on the indicator stand. To write on the lower part, turn the knob of the ribbon position indicator, located on the left front post, so that the pointer is over the red spot on the indicator stand. When a one-colour ribbon is in use, both halves of it can be used by moving the ribbon position indicator to the two points in question, so that the whole surface may thus be covered. It is preferable, however, when using a one-colour ribbon, to exhaust the upper track first, and then, instead of altering the position of the ribbon indicator, to remove the ribbon from the ribbon carrier, and invert it before re-insertion. (For instructions on this last point, *see* Section XXVII—Putting on a New Ribbon.) If one simply turns the knob of the ribbon position indicator to bring the lower track into play for *permanent* use (instead of for merely temporary use, as in the case of two-colour work), the ribbon has to oscillate widely with each impression—and that is best avoided.

ROYAL.—To write on the upper or lower colour of a two-colour ribbon. move the colour shift lever (BB 16) to indicate "Upper" or "Lower," as desired, When using a one-colour ribbon, let the lever in question stand at "Upper" until the ribbon has travelled its entire length a few times; then change to "Lower," and so alternate until both halves of the ribbon are exhausted.

L. C. SMITH.—The ribbon key (DD 30) determines which portion of a two-colour ribbon shall come into play. It is located above the top row of character keys in the keyboard, and to the left of the first tabulator key. It thus "balances" the back-space key as regards position. When the ribbon key is in normal position (up), the writing will be in the colour of the top half of the ribbon: when pressed right down, the writing will be in the colour of the lower half of the ribbon. If a single-colour ribbon is in use, operation of this ribbon key permits of the whole ribbon being used up. Slight lateral pressure releases the key, and allows it to spring back to the "up" position. (*See* Section XXXI—Stencil Work—L. C. Smith.)

SMITH PREMIER.—A pointer (FF 30) on the left-hand front post indicates whether the upper or lower half of the ribbon is in working position. The colour key (FF 29), near the top left-hand corner of the keyboard, controls the ribbon. Depression of it will reverse the working position of the ribbon, whatever it may be at the moment; that is to say, if the upper half of the ribbon is in action, depression of this key will bring the lower half into play, and *vice versa*.

UNDERWOOD.—The two shift-keys (OO 17) controlling the bichrome (or two-colour) ribbon are at the right, in front of the machine, just behind the keyboard. Depress the left-hand key, and the upper half of the ribbon will be in working position: depress the right-hand key, and the lower half of the ribbon will be in working position.

On most machines fitted with two-colour ribbon mechanism, there is a third position for the ribbon, as described in Section XXXI—Stencil Work.

XXVI

THE RIBBON REVERSE

While on all the machines under survey (with one exception, noted below), the ribbon automatically reverses whenever it reaches the end of its travel in either direction, it is sometimes necessary to control the direction of its feed—*e.g.*, when changing ribbons. The method varies in different machines.

BARLOCK.—To reverse the direction of the ribbon feed by hand, pull forward the handle of the lever nearest the spool which it is intended the ribbon should fill. To wind the ribbon, simply turn the spool which the lever is set to fill.

EMPIRE No. 1.—The ribbon winds on to the spool with which the ribbon pawl is in engagement. The pawl can be swung into engagement with either spool at will by means of the shifter-knob (E 144). To wind the ribbon by hand, turn the reel on to which the ribbon is automatically feeding at the time.

EMPIRE No. 2.—The direction of the ribbon feed may be reversed at any time by pressing either of the ribbon reverse arms (of which K 565 is the left one), to the right, if it is desired that the ribbon should feed towards the left spool, and to the left, if it is desired that the ribbon should feed towards the right spool. After this, depress the space-key sharply. To wind the ribbon by hand, turn the reel on to which the ribbon is automatically feeding at the time, until the short length of material permanently attached to the reel appears. That indicates that the ribbon has come to an end.

MONARCH.—The main shaft crank (M 6560) is at the right-hand back corner, under the top plate. (There is a duplicate of this crank in the corresponding position on the left-hand side of the machine—not visible in the plate.) The position of this crank determines in which direction the ribbon shall feed. It can be pulled out or pushed in. When the left-hand crank is pushed in, or when the right-hand crank is pulled out, the ribbon will feed from left to right; and when the left-hand crank is pulled out, or the right-hand crank is pushed in, the ribbon will feed from right to left. In other words, the ribbon will feed in the direction towards which one of the cranks is pulled or pushed. To wind by hand, simply turn the crank, having previously set it to feed either to the right or to the left, as may have been desired.

OLIVER.—The ribbon feeds automatically, but it does not reverse automatically. The direction of its movement is determined by two small protruding push-buttons (V D 2), one on each side of the base. When one button is flush with the base, as far in as it can be pushed, the other will project from the opposite side of the base. When one is pushed half way, the other will be found in the same half way position. This is called the neutral position. When the buttons are in this position, the ribbon does not feed at all, but can be wound by hand in either direction, as explained below. When button on left side of the machine is pushed right in, the ribbon will wind automatically into left-hand ribbon-box. When button on right is pushed right in, the ribbon travels to the right. When the ribbon is all, or nearly all, wound on to one spool, extra resistance will be felt as the keys are operated. Directly this is felt, push in, flush with the base, the push-button on that side of the base which is under the empty ribbon box. The ribbon will then feed from the opposite box into the empty one.

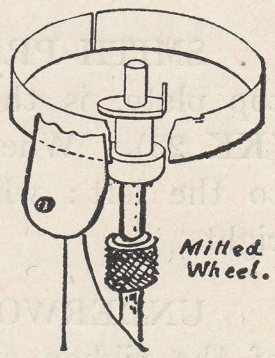


Diagram *I*

RIBBON BOX (OLIVER)

To wind the ribbon by hand, place push-buttons in neutral position, as described above, and turn the milled wheel on ribbon spool shaft under the ribbon box into which it is desired to wind the ribbon. This can be done with the forefinger. *See* Diagram *I*, p. 47.

REMINGTON.—At the back right-hand corner of the machine, under the top plate, is the ribbon winding crank (X and Z 27670). This can be either pulled out to the right, or pushed in to the left. When it is pulled out to the right, the ribbon will feed from the left spool to the right: when it is pushed in to the left, the ribbon will feed from the right spool to the left. To wind by hand, proceed as in the case of the Monarch.

ROYAL.—The ribbon movement may be reversed at will by moving the ribbon reverse lever (BB 6) to the right or left, as may be desired. To wind the ribbon in either direction by hand, move the ribbon mechanism reverse lever to the left, and, while holding it so, wind the ribbon by placing a finger in the depression in the top of one of the spools. To wind the ribbon from left to right, place the finger in the depression in the right-hand spool, and turn it anti-clockwise: to wind the ribbon from right to left, place the finger in the depression in the left-hand spool, and turn it clockwise.

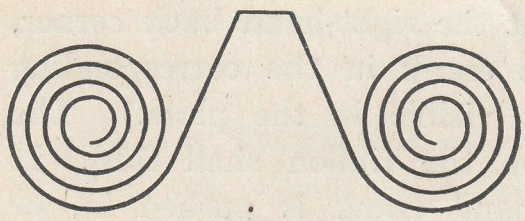


Diagram *J*

DIRECTION OF RIBBON MOVEMENT (ROYAL)

L. C. SMITH.—The movement of the ribbon may be reversed by pressing the ribbon reverse lever (DD 29) to the right or left, as required. This lever is near the left-hand front corner of the top plate. To wind the ribbon by hand, simply turn one of the spools by means of its knurled thumb-piece (DD 8 or 28).

SMITH PREMIER.—At the back left-hand corner of the machine, under the top plate, is the winding crank (KK 25). Round the shaft of this is a collar (KK 23). When this collar is pulled to the left on the shaft, the ribbon winds to the left: when the collar is pushed to the right, the ribbon winds to the right.

UNDERWOOD.—The ribbon may be wound towards either spool by means of the ribbon spool ratchet wheel (OO 16). To wind from the right-hand spool to the left, the wheel should be pressed to the left: to wind from the left-hand spool to the right, the wheel must be held firmly to the right. The ribbon spool ratchet wheel is on the right-hand side of the machine, rather low down, and about half way between the front and back side-posts. To wind by hand, simply turn the wheel in question—pushing it to the left, or pulling it to the right, according to the direction in which you wish to wind the ribbon.

XXVII

PUTTING ON A NEW RIBBON

THIS operation is nothing like so simple as it was in the case of the old-fashioned understroke machines. In fact, the first time the job is tried, the operator is generally pretty badly worried by it.

Before attempting it for the first time, therefore, note carefully the way in which the old ribbon has been placed in position: mark its directions, and its turns and twists; for you have to reproduce them in putting on the new ribbon.

Any printed description of the way in which a new ribbon is put on to a machine will make the job seem hopeless: but it really isn't as hopeless as it seems, particularly if you do what you are recommended to do in the preceding paragraph. The second time you put a ribbon on, the work will be easy enough.

The task is now somewhat simplified by the fact that ribbons are generally sold ready wound on spools appropriate to the various machines. This saves a good deal of winding. Care must, however, be taken that the spools really are suitable for the machines they are supposed to fit, for much trouble has arisen from the use of unsuitable spools. If they do not fit properly, they interfere with the ribbon-feed, or with the automatic reverse. The ribbons sold by the typewriter companies can, of course, be relied upon to fit the machines for which they are intended.

Do not be rough when adjusting the new ribbon to the ribbon vibrator—which is necessarily lightly made, and, therefore, easily bent. If badly bent, it puts the oscillating movement of the ribbon out of order.

In putting a new two-colour ribbon on to any machine, see that the most-used colour lies uppermost or foremost. (Special instructions are given below as regards the procedure in the case of the Smith Premier machine.)

Incidentally, it may be mentioned that after a new ribbon has been put on to a machine, it will often be found that the touch seems to have become slightly heavier, and the action generally less responsive. This is because the new ribbon is more humid than the old one, and—partly because of its twists and turns—drags on the mechanism.

The method of putting on a new ribbon differs in the case of each machine.

BARLOCK.—Barlock-made ribbons are sold ready wound on proper spools. The free end of the ribbon is provided with a metal hook, for attachment to the empty spool of the machine.

To remove the old ribbon and spools, first wind as much as possible of the ribbon on to one spool, by turning the spool towards which the ribbon, at the time, is feeding. Then turn the machine round to the position shown in plate B, and push back the spool-retaining levers (A 442), and hold them back, one at a time, while the spools are slipped off the shafts. Disengage the ribbon from the

ribbon carrier arms, and then unhook the old ribbon from the empty spool. Take the empty spool, and slip the hook of the new ribbon into the slit in the hub of the spool, and wind the ribbon on a few turns. (Be sure that the ribbon is one intended for the model which is actually in use. The same ribbon-spools will fit the No. 12 or the No. 14, but spools for earlier models will not fit the No. 12 and No. 14, and will stop the working of the machine.)

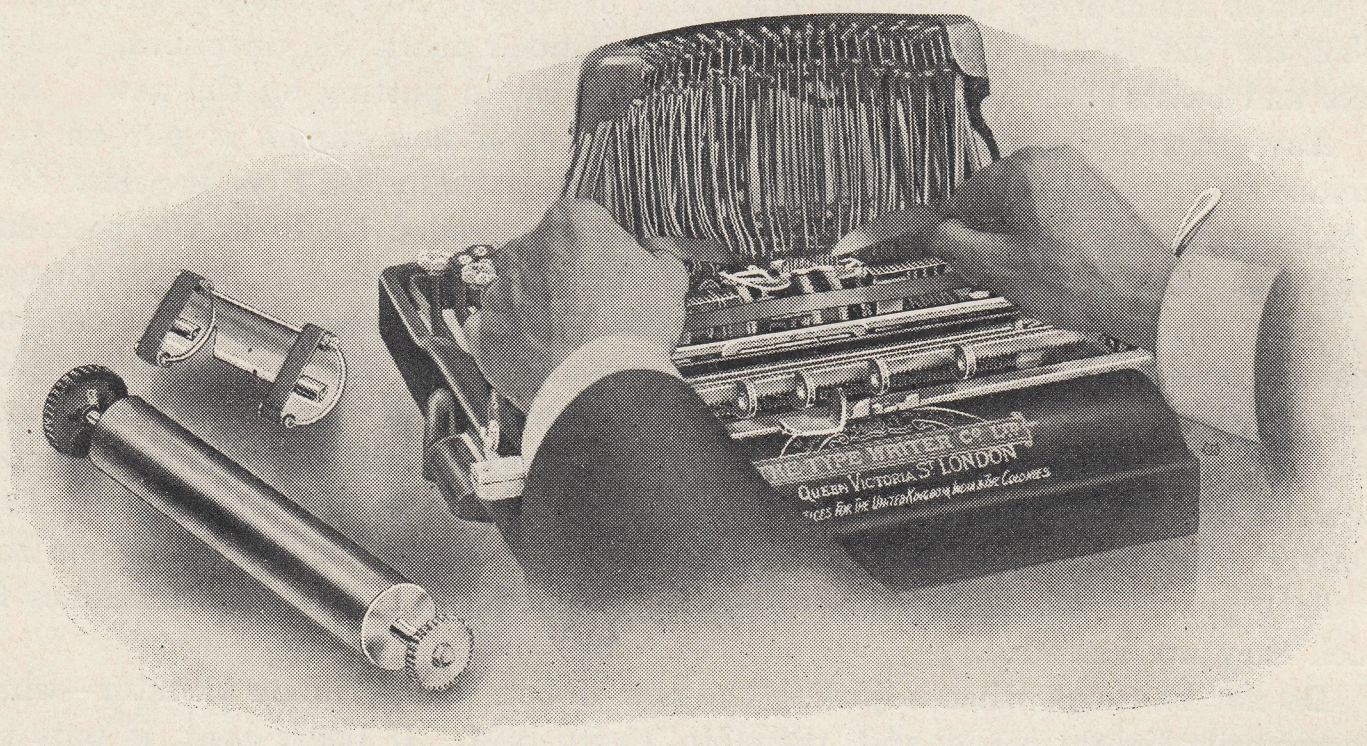


Diagram *K*

PUTTING ON A RIBBON (BARLOCK)

To replace the two spools to which the new ribbon is now attached, push the levers back, while you slip the spools on to their shafts, one at a time, and then let the levers enter their respective spools, and rest against the ribbon. The ribbon should reel off from the bottom of the full spool. Slide a piece of thick paper, or thin card, between the ribbon carrier and its lower plates, hold the ribbon stretched flat between the thumb and forefinger (*see* Diagram *K*), slide the ribbon in, and place it over the ribbon carrier.

EMPIRE No. 1.—Wind the ribbon entirely on to one spool, as directed in Section XXVI. At the end of the ribbon on the empty spool will be found a metallic spring slip, easily removable by firm pressure between thumb and finger. Place the end of the new ribbon across the hub, and spring the clip back to place round it. After replacing the spools on their studs, see that the ribbon is properly threaded through the rocking arms (J 128) in front of the printing point. Note that the reels are marked "Right" and "Left," and that the appropriate reels should be placed right and left, and not reversed.

EMPIRE No. 2.—First wind all the ribbon on to one reel, as directed in Section XXVI. When a short length of material permanently attached to the reel appears, proceed as follows: Free ribbon from the clasp which holds the ribbon in place, and remove that end. Then remove the ribbon from the other reel in the same way, when both clasps will be free and ready to receive the ends of the new ribbon. Insert the free ends in the clasp under the latch, allowing it to extend about half an inch beyond it; then fold it over and draw ribbon so as to engage the hooks of the clasp. Now take off the reel on the other side, and temporarily substitute for it the spool on which the new ribbon is wound: then turn the reel to which the free end of the ribbon has already been attached, and so wind the ribbon evenly on to the reel until it is all off the temporary spool. Then take off the temporary spool, replace the machine reel, and attach the end of the ribbon to the metal clamp. Be careful to enter the ribbon properly in the slots of the two reversing arms (K 565 is the left one), and the two arms of the ribbon rocker. Note that the metal clamps that hold the ribbon must be to the left or right (as the case may be) of the reversing arms, never between those arms and the ribbon rocker. Note, too, that the reels are marked "Right" and "Left," and that the appropriate reels should be placed right and left.

MONARCH.—Wind all the old ribbon on to one spool. (*See* Section XXVI —The Ribbon Reverse—Monarch.) Lift that spool out of the ribbon spool guard (or case) (M 6205), detach the old ribbon, and place the end of the new ribbon under the clamp next to the core of the spool; then push the clamp down until it snaps into place, and holds the ribbon securely. Then return the spool to its place, and the ribbon can be wound on to that spool. Then remove the opposite spool and attach the ribbon to it. In putting these spools back into their places, be careful not to exchange them. They are marked "Right" and "Left" for the respective sides of the machine. See that the ribbon is in the slots of the spool guards, and then adjust the ribbon to position in the ribbon carrier at the printing point.

If a new ribbon is bought already wound on a Monarch spool, it will only be necessary to wind the old ribbon on to one spool (either right or left, according as the new ribbon is worn on to a right or left spool: if wound on a right spool, wind the old ribbon on to a right spool.) Remove the old (full) spool, insert the new one, and then proceed to attach the free end of the new ribbon to the empty spool by means of the snap, and adjust to position as described above.

OLIVER.—As stated in Section XXV—The Ribbon—Oliver, this machine may be fitted with either a one-colour or a two-colour attachment.

When fitted with a one-colour attachment, the following instructions apply—

Set the push-buttons in neutral position—that is, so that they project equally —each being half in, half out. (*See* Diagram *L.*) With the fingers, turn the milled

wheel (Diagram *I*, p. 47), until all the old ribbon is in one box. Remove the empty wooden spool from the opposite box, and undo that end of the ribbon by removing its metal clip. Keep the spool and clip (Diagram *M*, E). Lift the full spool, with the old ribbon, from the other ribbon box, thus removing the old ribbon from the machine. Place the new ribbon, ready wound on wood spool, in box. To make the instructions clear, let us suppose that the new ribbon, with its spool, has been placed in the left-hand ribbon box. Draw the free end of the new ribbon through the slot in the

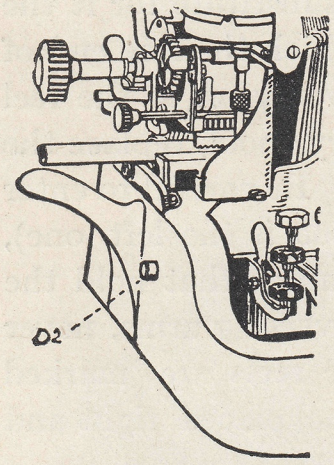


Diagram *L*

RIBBON PUSH BUTTONS (OLIVER)

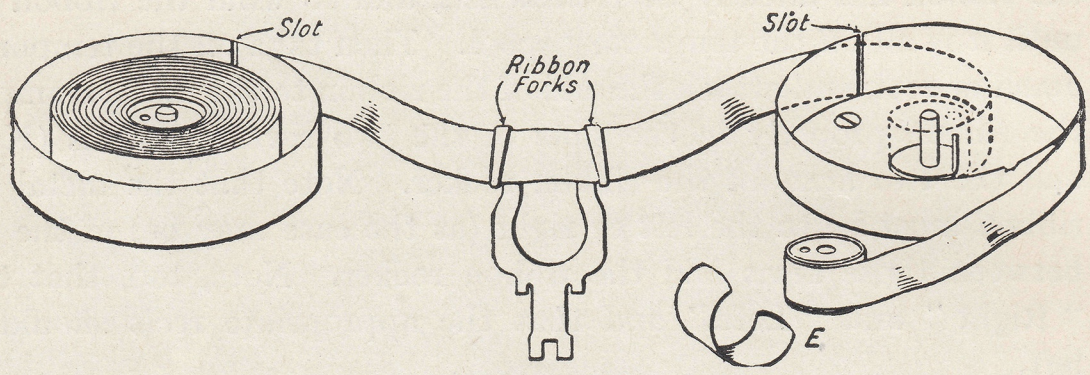


Diagram *M*

PUTTING ON A RIBBON (OLIVER)

back of the box, passing it temporarily round the back of the right-hand box. (This is simply to make sure that there is no twist in the ribbon.) Clamp the end of the new ribbon to the old empty spool by means of the metal clip with which the old ribbon was previously fastened to that spool. Place the old spool, with ribbon attached, inside the right-hand box, and through the slot as indicated by the dotted lines in cut. Tuck the ribbon under the ribbon forks, with top edge of ribbon in end of ribbon fork farthest away from the keyboard. Replace the lids, seeing that the V-shaped cut in each lid is over the slight projection in front of the ribbon box. This brings the wide cut in the lid over the wide slot at back, through which the ribbon passes from the box. Push in, flush with base, the push-button which is on the same side as the empty spool. The ribbon will then wind on to that spool when the machine is operated.

When the machine in use is fitted with a two-colour attachment, the following instructions apply—

Wind the ribbon on to one spool : then remove the empty spool, A 4 (Diagram *N*), and detach ribbon by removing spring-clip, B 4—keeping the empty spool and clip. (A new ribbon, when supplied by the Oliver Co., comes ready wound on its own spool.) Place the new spool and ribbon in box on shaft, D 4, so that the ribbon will feed from the rear of the spool. If a two-colour (or bi-chrome) ribbon is to be used, place it in the box with the alternative colour (usually red) downwards. Draw the ribbon through the slot of this box, and place cover on box, fitting it tightly in position,

pass the ribbon across the machine, and fasten it on to the empty spool by means of the clip, B 4. Pass the ribbon through the slot of this box, and place the spool in its proper position in the box on the shaft, D4, as in the first instance. Put the cover on, taking care that there is no twist in the ribbon, and that the smaller of the two notches in the ribbon box cover fits over the small projection on front of ribbon box. This brings the wide notch in the cover over the slot in rear of box—the slot through which the ribbon feeds—and permits free action. Pass the upper edge of the ribbon into the ribbon carrier, B 2. This prevents the ribbon from slipping out of the carrier. When using a two-coloured ribbon, the alternative colour (usually red) must lie towards the keyboard when in the carrier, with a twist of a quarter turn on each side. In twisting, take care not to crease the ribbon.

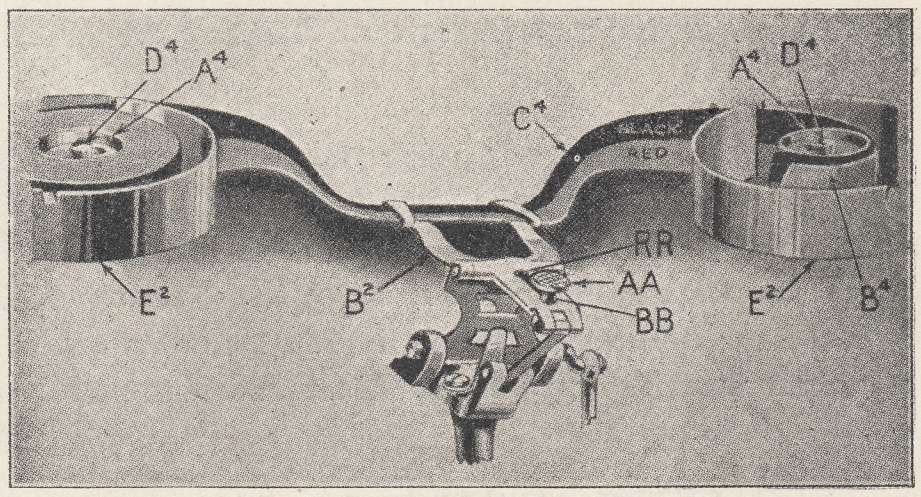


Diagram *N*

PUTTING ON A TWO-COLOUR RIBBON (OLIVER)

In reading the previous paragraph, it should be remembered that the ribbon used on a machine fitted with two-colour mechanism is not necessarily a two-colour ribbon. A single-colour ribbon of appropriate width can equally well be used. (*See* Section XL—RIBBON WIDTHS—OLIVER.)

After the new ribbon has been placed on the machine, push in the button D 2 (Diagram *L*, p. 52) on the side of the machine on which the empty spool lies, so that it (the button) is flush with the base.

REMINGTON.—Assuming that the new ribbon has been bought ready wound on a proper right-hand Remington spool, proceed as follows: Wind all the old ribbon on the right ribbon spool. Detach ribbon from the left-hand ribbon-tape (which tape is permanently attached to the left-hand spool), being careful to keep the end of the tape above the top plate, or you will have to "fish" for it. Press on the snap catch which protrudes forward from the right-hand spool shaft, and take off the right-hand spool. To the ribbon spool shaft is attached a weight, which is the "control" of the automatic ribbon reverse. Turn the ribbon spool crank (X 27670), until the weight rests on top of the ribbon spool shaft. There is a cut-out on one side of every Remington made spool through which this weight will pass. Hold the new spool with the cut-out side next to the ribbon spool shaft, and, before the new spool is placed on the ribbon spool shaft, pass the free end of the new ribbon up through the slot above the right-hand spool-shaft, and across the type-basket, and attach it to the tape on the left-hand spool, which we left waiting to receive it. Take care to fasten the

ribbon to the clip so that the clip lies *above* the ribbon. Insert on right ribbon spool shaft the new spool in place of the old one, seeing that it is properly inserted so that there is no twist in the ribbon. Hold the ribbon over the type-basket between the thumb and forefinger of each hand, place it behind and below the ribbon-carrier (X 27621), and draw it up into the loops thereof. Do not attempt to thread the ribbon through the loops of the ribbon-carrier. The ribbon is now in position in the ribbon-carrier. Turning the crank (X 27670) will straighten the ribbon.

ROYAL.—After removing the old ribbon, throw the hand ribbon reverse lever (BB 7) to the left: open the door (BB 17) of the right ribbon spool guard: attach the new ribbon to the leader, winding the ribbon on to the right-hand spool by turning anti-clockwise. (*See* Section XXVI—The Ribbon Reverse—Royal.) Pass ribbon through guides and vibrator (BB 27), and attach to leader on left spool. Spools on machines are stamped "right" and "left," and should not be exchanged.

L. C. SMITH.—Wind all the ribbon on to one spool, turning the spool as directed in Section XXVI—The Ribbon Reverse—L. C. Smith. Remove the empty spool from the machine by removing the thumbscrew (DD 10 or 27) in the centre of the spool. Unhook the ribbon from the spool. Reverse the ribbon switch (*see* Section XXV—The Ribbon—L. C. Smith), and draw all the ribbon from the other spool, unhooking the ribbon as in the first instance. Attach one end of the new ribbon to the hook on the centre post of one of the machine ribbon spools. With this spool in position, revolve it, holding the reel containing the new ribbon between the thumb and finger of the other hand, until the ribbon is nearly all wound on to the machine spool. Attach the free end of the ribbon to the spool, drawing it nearly tight. Then slip the ribbon into the slots of the ribbon vibrator (DD 19).

SMITH PREMIER.—Remove the platen from the machine (*see* Section XXXIV—Changing the Cylinder—Smith Premier). Wind the ribbon on to the right-hand spool (Section XXVI—The Ribbon Reverse—Smith Premier), until the left-hand spool is empty, holding down with the right hand the ribbon reverse controller (JJ 21). A gentle pull on the ribbon will release it from the left-hand spool. Hold down the ribbon reverse controller, and wind the balance of the ribbon on to the right-hand spool. Remove the right-hand spool by pulling sufficiently to the right the spool shaft knob (KK 27), whereupon the right-hand ribbon spool with its contents may be removed from the machine, preparatory to inserting the new ribbon.

Assuming that the new ribbon is ready wound on a standard Smith Premier right-hand spool, insert the new spool. The ratchet teeth on the spool-head must be towards the left, or inside, facing the ratchet teeth of the opposite spool.

Pass the end of the ribbon up through the opening in the top plate over the ribbon vibrating shaft (KK 28). See that the ribbon is not twisted, and, if it is a two-colour ribbon, that the least used colour is towards the right. Next, pass the ribbon under the lower right-hand side of the ribbon vibrating frame (KK 39); then through the right diagonal ribbon-guide (*O* 41) from the front; then across the back of the vibrator, and forward through the left diagonal ribbon-guide (*O* 42). The ribbon may be slipped into these diagonal guides through the opening in the top more readily than by threading it through. Pass the ribbon down under the lower left side of the vibrating frame (KK 40), being careful that the ribbon is not twisted; then over the ribbon vibrating shaft and down to the left spool. Push the end of the ribbon into the slot of that spool with the ribbon tool provided, or with a penknife, or other thin, blunt, instrument.

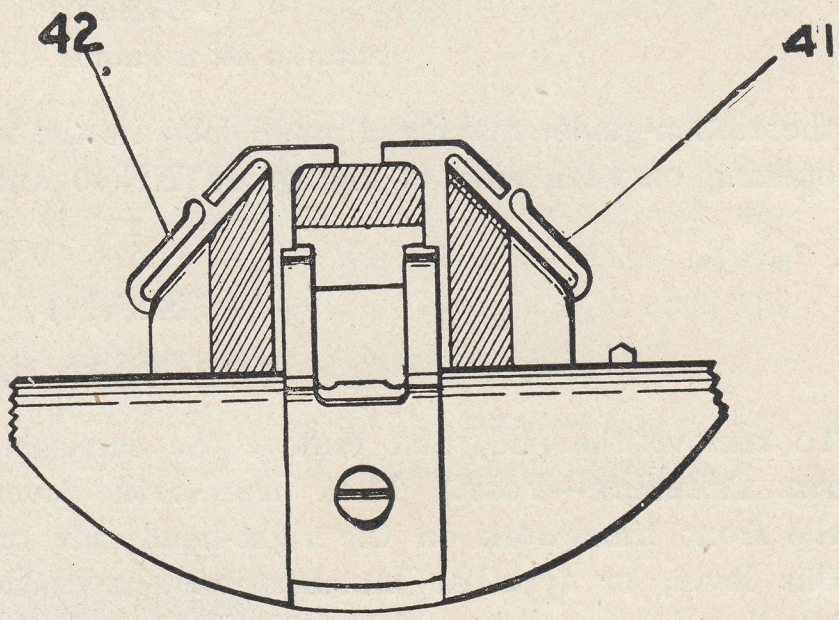


Diagram *O*

PUTTING ON A RIBBON (SMITH PREMIER)

If, however, the new ribbon is not wound on to a standard Smith Premier spool, the following instructions will apply as from the beginning of the preceding paragraph. Wind the ribbon upon the spool that has been removed, after discarding the old ribbon. To do this, insert the empty spool into its regular position on the machine, fasten the end of the ribbon into the spool hub with the least used colour to the right (if a two-colour ribbon), holding down the ribbon reverse controller (KK 21), and wind the ribbon on to the spool by turning the winding crank.

UNDERWOOD.—Place the carriage in a central position: depress the shift-key lock (PP 11). Wind the ribbon all on to one spool, remove the spools from the cups, and the ribbon from the ribbon-guide (NN 4). Detach the ribbon from the empty spool, and attach the end of the new ribbon by the hook (*P* 1) (with which all Underwood-made ribbons are equipped) to the empty spool. Wind the ribbon round the empty spool for a few turns, until the eyelet (*P* 2) reaches the hub, taking care that the ribbon feeds to the front on both spools, as shown in the plate NN. Place the spools in the cups, pass the ribbon through the slots in the cups, in front of the rollers, and through the reversing levers (NN 5 and 6), being careful, of course, that the eyelet is inside the cup and the reversing lever, as shown in Plate NN. This is ensured by taking hold of the handles (NN 8 and 9) extending from the sides of the ribbon-cups, and drawing them towards you, thus throwing the rollers and automatic

reversing levers into such positions that the ribbon can be inserted easily. Care must be taken when placing the spools in the cups to see that the pins in the bottom of the cups enter the holes in the ribbon spool hubs. Place the ribbon behind



Diagram *P*

PUTTING ON A RIBBON (UNDERWOOD)

the ribbon-guide, making a small loop in the ribbon, and pushing it down in the opening on each side of the guide (**NN 10** and **11**).

XXVIII

THE YOST PAD

To remove the pad, first remove the carriage. (*See* Section **XXXV**—REMOVING THE CARRIAGE—YOST.) Then depress the lever which will be found just inside the front framework on the right-hand side of the machine. The depression of this lever, or type-bar buncher, will have the effect of bringing the typebars together in the centre of the machine. With a screwdriver remove the pad-case screws. Take hold of the small ear of the pad-case where the screw has just been removed, lift up, and draw to the right ; the opposite end will then drop, and the pad can be removed.

To insert a new pad, simply reverse the above process.

XXIX

THE TENSIONS

THE caution given in Section III as to leaving the tensions alone, unless it is absolutely necessary to adjust them—and you are sure that is so—must here be repeated. Don't tinker for tinkering's sake. The following special instructions upon the point are, however, given by a few of the makers.

EMPIRE No. 1.—Finger-key tension. Under the space-key in front of the frame will be found a knurled thumb-screw : turn this to the right to make the action harder for high-speed capacity, and to the left for a softer touch. Always adjust to as soft a touch as will allow sufficient speed.

MONARCH.—(1) Finger-key tension. The key lever fulcrum plate adjusting screw (**N 570**), on the rear of the base below the escapement, when turned down, increases the tension on all keys alike, and, when turned upward, decreases the tension.

(2) Carriage tension. The tension of the mainspring should be sufficient to secure proper freedom of carriage movement while writing, and no more. Use the bell (N 5420), located at the left at the back of the machine, as a thumb-wheel, to wind up and increase the tension. Work the ratchet-pallet (N 5620) at its side backwards and forwards to decrease the tension.

OLIVER.—The carriage tension is increased or decreased by turning the screw (V G 2).

REMINGTON.—Finger-key tension. The amount of tension on the letter-spacing rocker (AA 20174) is regulated by the coiled spring (AA 67130), which is secured to the letter-spacing rocker and the spring adjusting bridge. To increase the tension, loosen the set-screw (AA 71209), which holds the adjusting screw of the dog tension spring (AA 74060), and turn the adjusting screw to the right until the desired tension is secured; then tighten the set screw.

ROYAL.—Finger-key tension. To increase, turn inward the thumbscrew (Q 5 underneath the machine at rear. To decrease, turn it in the opposite direction.

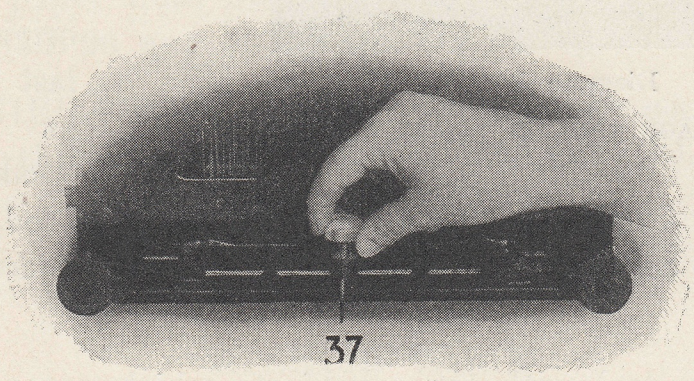


Diagram *Q*

FINGER-KEY TENSION (ROYAL)

Carriage-tension. To increase the pull of the mainspring on the carriage, turn to the left the screw embedded in the left-hand dust-plate, at or near 20 on the scale. To decrease, turn to the right, or downwards.

SMITH PREMIER.—The carriage tension may be increased by turning the carriage tension thumb-knob (JJ 32) to the right with a coin or a screwdriver. To decrease the tension, oscillate the tension reducing lever (JJ 33).

YOST.—Carriage tension. The mechanism will be found at the left-hand back corner of the machine (Diagram *R*). The tension is increased by turning the lever clockwise: it is decreased by depressing the lever at each end alternately.

Key tension. The mechanism is on the under side of the machine, close to the right-hand front base foot. The adjust screw connects with the spring, and passes through the tabulator stem guide plate. Turning the screw to the right increases the tension; to the left, decreases it.

Paper-feed adjust. The careful adjustment of the tension on the feed rolls will correct any irregularity in the paper-feed. It is made by means of four springs, fitted with adjust-screws, situated immediately behind the paper-table. Turning the screw to the right increases the tension; to the left, decreases it.

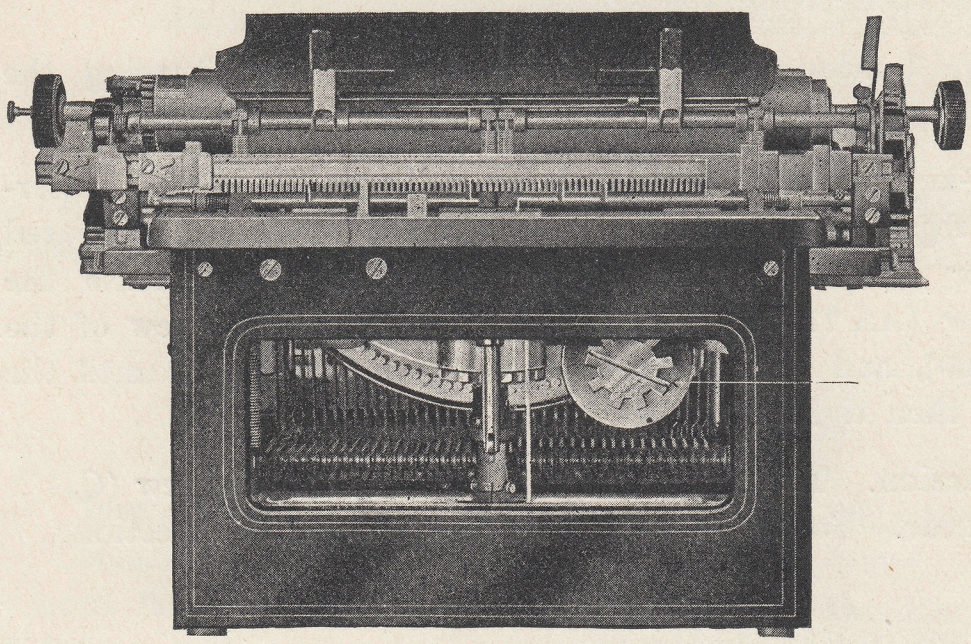


Diagram *R*

CARRIAGE TENSION (YOST)

NOTE.—If you *do* interfere with the tensions of any machine, remember that the lighter the tensions are set, the better—always assuming that they are sufficient for their work, and will give prompt and certain response. If the action of the machine is sluggish, don't take it for granted that the tensions are too weak. Their original adjustment should last pretty nearly for ever, as the springs rarely weaken in use. It is far more likely that the trouble is due to dirt, or gummed oil, or both. First try the effect of cleaning and lightly lubricating the parts concerned, before tinkering with the tensions.

We now come to deal with three subjects which are properly rather within the scope of a practical manual of typewriting than of this book. Here we shall deal only with the use of the mechanical devices concerned with the three processes—Manifolding, Stencil-Work, and Tabulation.

XXX

MANIFOLDING

IN inserting a collection of carbon-paper, interleaved with impression sheets, into the machine, it is best in all cases first to release the pressure of the feed-rolls (*see* Section XI—ADJUSTING THE PAPER)—more especially if the collection is a thick one—restoring the pressure after the top edge of the collected sheets has passed the feed-rolls. Otherwise, it will be found difficult to start the sheets properly when the cylinder thumb-wheels are turned: further, unless the pressure of the feed-rolls is so released, the carbon is very apt to get crumpled.

If you find that, when you are doing carbon work, the sheets are apt to slip,

clean the cylinder with methylated spirit, very lightly applied on a clean rag, letting the spirit dry on the rubber. If that fails, roughen the rubber of the cylinder with a rather coarse emery paper, but see that none of the emery falls into the working mechanism. The cylinder should preferably be removed from the machine for the purpose. (*See* Section XXXIV—Changing the Cylinder.) The cylinder should be turned while the emery-paper is applied lightly over its whole surface. You do not want to remove any of the rubber, but simply to roughen it. Go carefully therefore.

The following special instructions with regard to making corrections when manifolding are given by the companies concerned—

EMPIRE No. 1.—When thin paper is used to interleave the carbons, it is well to put a sheet of hard paper against the cylinder to prevent wrinkling.

OLIVER.—*See* Section XVI—Accommodating Different Widths of Paper, Etc.—Oliver.

ROYAL.—When carbon copies are being made, and a correction is necessary, do not remove the paper from the machine, but raise the bail (BB 34), drop the card-holding points (BB 26 and 29), and turn the sheets forward one at a time.

SMITH PREMIER.—When erasing on carbon copies, lift the swinging paper-fingers (FF 4), throwing them backward and outward, thus releasing the top copy.

XXXI

STENCIL WORK

Before beginning to cut a stencil on any machine, brush the types *very* clean. A satisfactory stencil cannot be cut with dirty types.

The next step is to put the ribbon out of commission, so that the types will strike direct on the stencil. The method of doing this varies with different machines.

BARLOCK.—Move the ribbon switch-lever to central position : the ribbon then ceases to interpose between the type and platen, allowing direct impact of the type on the stencil-paper. To resume typing with the ribbon, move the switch-lever to either purple or red, as may be desired.

EMPIRE.—Section XXVII—Putting on a New Ribbon—Empire, gives instructions as to the removal of the ribbon.

MONARCH.—*See* Section XXV—The Ribbon—Monarch, where reference is made to the purpose of three of the four notches accommodating the two-colour lever. The fourth notch accommodates the same lever when it is desired to throw it out of commission for stencil work. This fourth notch lies to the extreme left.

OLIVER.—Set the ribbon reverse push-buttons into neutral position (*see* Section XXVI—The Ribbon Reverse—Oliver), so that the ribbon will not travel automatically: remove the ribbon from the ribbon-carrier (V B 2), and catch it down in front of the ribbon-carrier: or simply pull the ribbon up in the centre, and catch the loop under the keys marked "Tab. Right," so that the types will not strike the ribbon.

REMINGTON.—Lift up the lever (X 27812) as far as it will go, and turn the knob (X 27961), until the pointer is over the white spot on the indicator-stand. When ready to resume ordinary writing, turn the knob of the ribbon position indicator until it is at one of the two alternative (colour) positions.

ROYAL.—Hold the stencil-lever (BB 15) to the left, while the colour shift lever (BB 18) is thrown to the extreme right, and indicates "Stencil." This is done in one operation, by the thumb and forefinger bringing the two levers together.

L. C. SMITH.—*See* Section XXV—The Ribbon—L. C. Smith. There it is shown that the position of the ribbon-key (DD 30) up or down determines on which half of the ribbon—upper or lower—the types shall strike, and which of the two alternative colours shall accordingly be written. There is a third position of the ribbon-key—midway between up and down—half-way down. When the ribbon-key is half depressed, it throws the ribbon out of oscillating action altogether, and thus clears the way for direct impact of the types against the stencil-paper. When it is desired to use the ribbon again, the ribbon-key can be freed from its half-way position by slight lateral pressure on it.

SMITH PREMIER.—Press down the colour indicating pointer, till it indicates white on the chart (FF 31). When the stencil has been written, press the colour-key (FF 29), which will bring the upper portion of the ribbon into writing position.

UNDERWOOD.—Push to the left the small lever (PP 20). To resume ordinary work, set the lever back to the right. This lever is near the extreme right-hand type in the type-basket.

YOST.—No special instructions are necessary, as there is no ribbon on this machine to intervene between the types and the stencil.

XXXII

TABULATION

This is a wide subject, but—as it is mainly a matter of practical operation—it is best dealt with in a practical handbook of typewriting, like *Pitman's Typewriter Manual*. It is not proposed to do more here than give a few hints as to the nature, setting, and actuation of the various tabulating devices embodied in the ten machines under survey.

The nature, setting, and actuation of those devices can best be understood if we imagine them applied to the tabulation of a few simple columns, such as the following—

.5	1.33	24.85	18763.8
	17.5		.5
12.0		172.99	1.33

With any form of tabulator, these four columns in three lines could be written much more expeditiously than would be possible by hand adjustment of the carriage. But the way in which the tabulator would be operated on the various machines would differ quite considerably, according to the construction of the tabulators in use on them.

There are three main kinds of tabulators. The first kind of tabulator "jumps" the carriage to a series of fixed points, determined by adjustable stops.

The second kind of tabulator (generally called a column-selector, or column-finder), "jumps" the carriage to any selected one of a series of fixed points, determined by adjustable stops.

The third kind of tabulator "jumps" the carriage to any desired point in the next column to the right of the work already written—the points being also here determined by adjustable stops.

We shall presently see how the stops are set on the various machines.

In a tabulator of the first kind, the operator would probably prefer to set his stops for the above table at points representing the units in each column. The general rule is to set the stops, for the first and second kinds of tabulators, at such points as will bring the carriage as directly as possible to the most regular starting positions in each column, and so to minimize the need of using the back-spacer and the space-bar. Supposing the stops, then, to be set in the units positions, the following would be the method of operating a tabulator of the first kind, in writing the above table.

First Line.—Press tabulator key, and jump the carriage, which will be checked by the first stop set: press space-bar once, and write .5. Press tab. key, jump, write 1.33. Press tab. key, jump, back-space once, and write 24.85. Press tab. key, jump, back-space four times, and write 18763.8.

Second Line.—Press tab. key twice, so as to pass first stop and get to second column: back-space once, and write 17.5. Press tab. key twice, so as to pass over the third column into the fourth, space once, and write .5.

Third Line.—Jump: back-space once: write 12.0. Jump twice, back-space twice, write 172.99. Jump: write 1.33.

Now let us compare the operation of a tabulator of the second kind—the column selector, or column-finder. It should, however, first be explained that a tabulator of the first kind has only one "jumping" key, whereas a column selector has either

four or five, according to the make of machine in use. By selecting the right key in the series, we can jump the carriage to the fixed points in *any* column. The following is an account of what would happen in the operation of a tabulator of the second kind—

First Line.—Same as with a tabulator of the first kind, the keys being selected in order—first for col. 1, second for col. 2, third for col. 3, fourth for col. 4.

Second Line.—Press second key, jump, back-space once, and write **17.5** : press fourth key, jump, space once, and write **.5**.

Third Line.—Press first key, back-space once, write **12.0** : press third key, back-space twice, write **172.99** : press fourth key, write **1.33**.

It will be seen that, as compared with the first kind of tabulator, a column selector is more direct in bringing the carriage to the proper points. It still necessitates considerable use of the space-bar and back-spacer, however.

A tabulator of the third kind either wholly obviates this trouble, or reduces it to a minimum. It is generally called a decimal tabulator, though it is applicable to sterling, or any other form of currency, as well as decimals. There are several keys (either five or ten, according to the make of machine in use), which give us a choice of positions in each column—not limiting us to a single fixed point in each column, as in the two cases previously described. There is, therefore, little or no use for the space-bar and the back-spacer in connection with tabulation of this kind.

First let us look at the operation of the 5-key tabulator. It is usual with this to set the column stops at some intermediate position—say, at the decimal point position. We shall then proceed as follows—

First Line.—Press first key, jump, and write **.5** : press second key, and write **1.35** : press third key, and write **24.85** : press fifth key, back-space twice, and write **18763.8**.

Second Line.—Press third key twice (so as to pass over col. 1), and write **17.5** : press first key twice (so as to pass over col. 3), and write **.5**.

Third Line.—Press third key, and write **12.0** : press fourth key twice (so as to pass over col. 2), and write **172.99** : press second key, and write **1.33**.

It will be seen that the back-space key has only been used on one occasion in writing the table with the 5-key tabulator, and the space-bar not once. It is never necessary to use these adjuncts to tabulation with a 5-key tabulator, except when the possible positions are more than five—as in **18763.8**—where there are seven positions.

In setting a 10-key tabulator of the third kind, we should again place the stops for each column at the decimal point position. As this tabulator gives us

a range of ten possible points, no use of the back-spacer or space-bar will be called for. We shall proceed as follows—

First Line.—Press first key, and write .5 : press second key, and write 1.33 : press third key, write 24.85 : press sixth key, write 18763.8.

Second Line.—Press third key twice, write 17.5. (We press it twice so as to pass over col. 1.) Press first key twice (to pass col. 3), and write .5.

Third Line.—Press third key, write 12.0 : press fourth key twice (to pass col. 2), and write 172.99 : press second key, and write 1.33.

In actuating any tabulator, it is important that the tabulator key be held depressed until the carriage abuts against the next stop. If it is released before the carriage gets there, the ordinary spacing mechanism may be damaged.

The various uses and applications of the tabulator cannot be fully illustrated here : the subject belongs to the practical *Typewriter Manual.* In describing the different devices on the various machines, however, some further light will be thrown upon their value to the operator.

BARLOCK.—The Barlock has a tabulator of the first kind. It consists of a flat steel rack, and several stops (D 53), having teeth corresponding with those of the rack. To set the stops, proceed thus : Place in the machine the form which the stops are to be set to accommodate. Note the number on the paper-scale at which the first column is to begin ; then lift the stop-piece out of its position in the rack, by pressing together its two handles with the thumb and second finger, and move it to the desired number corresponding with that on the paper-scale, and insert it in its new position. After the several stops have been thus set to fit the form in hand, superfluous stops should be placed at the extreme left of the rack.

Depression of the tabulator key (A 2) on the right-hand side of the keyboard, about half-way between top and bottom rows, allows the carriage to jump to the successive stop-points one after another. The back-spacer and space-bar can, of course, be used to adjust the carriage for writing to the left or right of the fixed stop-points.

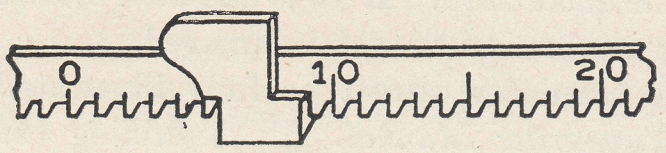
EMPIRE No. 1.—Has no tabulator.

EMPIRE No. 2.—This machine has a tabulator of the first kind. The stops (L 448) are at the back of the machine on the tabulator bar (L 440). The notches on this bar are graduated to correspond with the degrees of the carriage-scale, it being a simple matter to set them to suit the arrangement of any desired form.

The tabulator key (K 449) is at the end of the second row of keys in the keyboard. When this tabulator key is depressed, the carriage " jumps," and comes to a standstill, but moves one letter-space farther when the tabulator key is lifted. Its second resting point represents the position determined by the fixed stop.

MONARCH.—A tabulator of the first kind is standard on this machine. Behind the carriage is a column stop rod (N 7030), bearing several adjustable stops (N 7530). The scale on this rod corresponds with the scale on the front of the carriage next to the paper. These stops may be adjusted for governing the starting points for columns of figures. Pressure on the tabulator key (M 7560), —the lower of two keys of similar appearance on the right-hand front post—" jumps " the carriage. The Monarch can also be supplied fitted with a tabulator of the third kind.

OLIVER.—A tabulator of the first kind is standard on the Oliver. The right-hand marginal stop rack, located on the lower front part of the carriage, is graduated to correspond with the writing scale. To this stop rack are attached the regular right-hand marginal stop, and also a number of similarly operated stops (*S* v), which may be moved along the rack to any point desired.



v
Diagram *S*
TABULATOR RACK AND STOP (OLIVER)

When it is desired to begin columns at particular points, read from the extreme right-hand edge of the stops when adjusting them on the rack. The stops may be moved to the left by a slight pressure of the finger on the lower right-hand corner, and to the left by grasping them between the thumb and finger, and drawing down the lower right-hand corner.

The tabulator key is marked " Tab.," and is in the centre of the machine, between the carriage and the keyboard.

ROYAL.—This machine has also a tabulator of the first kind as standard. The tabulator stops (CC 39) are adjustable to any desired positions upon the tabulator rack (CC 38) at the back of the machine, this rack being graduated to correspond with the bail-rod scale (BB 34). The tabulator key that " jumps " the carriage is BB 12.

UNDERWOOD.—On this machine also, a tabulator of the first kind is standard, but a 10-stop tabulator can be fitted to order. The tabulator stops (LL 7) are at the back of the machine, on the rod of the tabular frame. The scale of the tabular frame (LL 8) is graduated to correspond with the front scale (OO 4), and, when the tabular stops are set at given positions on the tabular scale, the carriage will stop at corresponding positions on the front scale. Depression of the tabular key (PP 15) " jumps " the carriage. The stops can be set by pulling them back out of the teeth of the tabular rack, when they can be pushed freely in either direction, and reset where desired. Care should be taken that the stop meshes tightly on the rack. If it is not desired to use these stops, throw them back out of the teeth of the rack.

It is advisable to hold the carriage with one hand, while adjusting the stops with the other, as the carriage may otherwise spring out of control if the rack is pressed in.

Machines having tabulators of the second kind—column selectors, or column finders—are the Remington No. 10, the Smith Premier, and the Yost. The Smith Premier is in the unique position of having two forms of tabulator built into it, the column selector and a tabulator of the third kind.

REMINGTON No. 10.—A 5-stop selector is standard on this machine. The stops (*T* 51811) are simply pushed on to the rack (*T*51913) at the most convenient

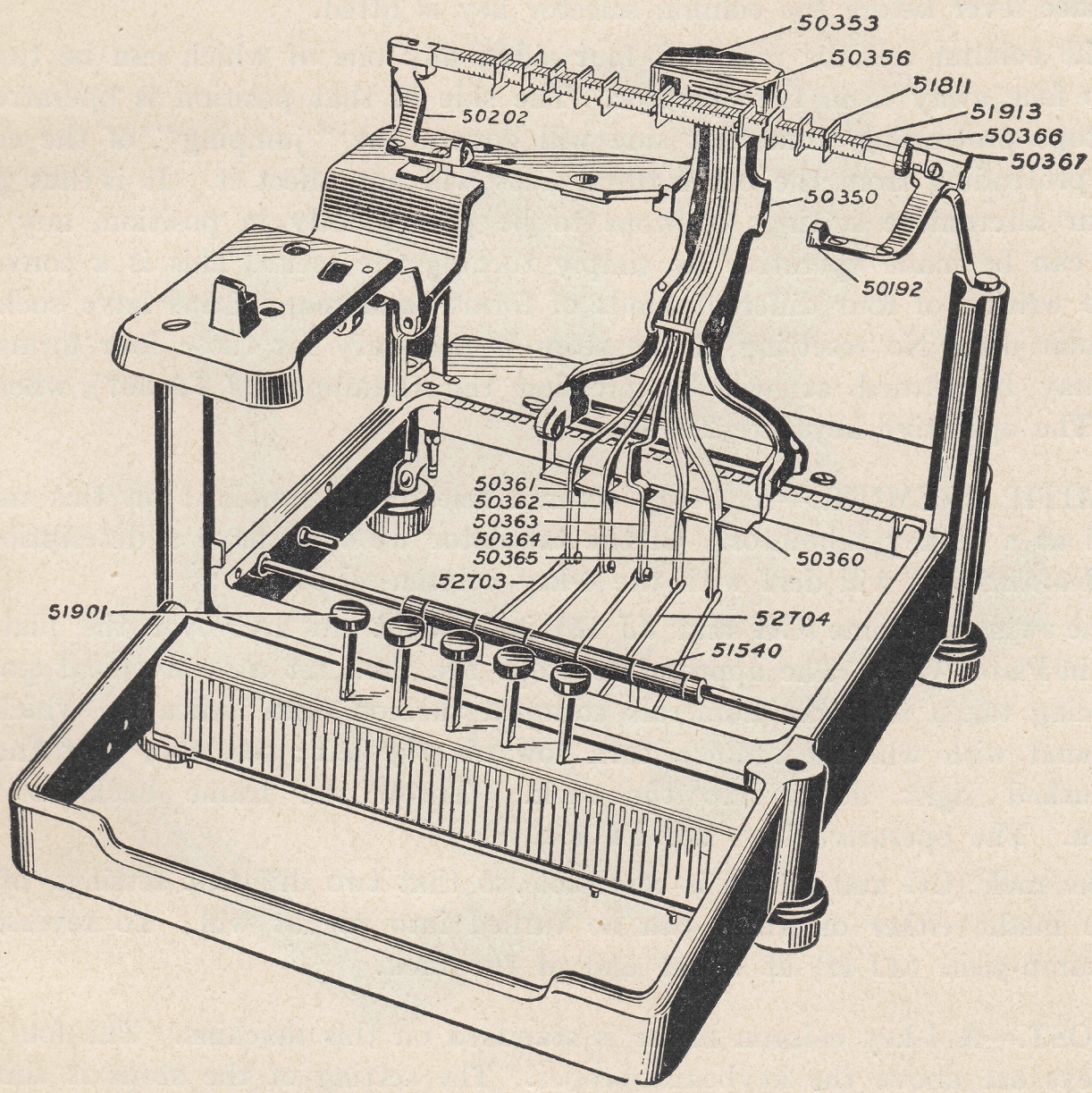


Diagram *T*

COLUMN SELECTOR MECHANISM (REMINGTON)

positions for the work in hand. The stops, however, vary in shape and size, there being an appropriate form of stop for each column. Care must be taken, therefore, when setting the stops, to see that the appropriate form is selected for each column. (The stops are marked with the numerals from 1 to 5, to indicate their proper positions.) Care must also be taken that the retaining springs are all on the right-hand sides of the stops, or the stops will not function.

The column selector can be made to "select" not only when the carriage is moving from right to left, but also when it is being returned from left to right. For instance, suppose a stop had been set at 20, and that the carriage stood at some later point, and it was desired to stop at 20 on the "return journey." This could be done by simply pressing the appropriate column selector key while the carriage was being pulled back to the right by means of the line-space lever. In doing this, however, care must be taken that the hand quits the line-space lever before the column selector key is lifted.

The column selector rack has four sides, any one of which can be turned at will to face away from the operator. The side in that position is operative, and any stops protruding from that side will govern the "jumping" of the carriage. Stops protruding from the other three sides will not affect it. It is thus possible for four alternative settings of stops to be permanently in position, any one of which can be made operative by simply turning the rack. This is a convenience for the writing of four different kinds of forms—and many firms have such forms in regular use. No resetting of the stops is necessary for those four forms. The rack may be turned at will by pressing the thumbpiece (*T*50367), when it is free. The operative keys are *T*51901

SMITH PREMIER.—A 4-stop column selector is standard on this machine, as well as a 10-key tabulator. Of the tabulator we shall have a description later on. Meantime we will deal with the 4-key column-selector.

The swinging frame (GG and JJ 18) is brought up and over the platen, as shown in Plate (GG). The appropriate stops are then set at convenient positions, care being taken that the numerals stamped thereon (and indicating which stops correspond with which columns), turn towards the left: see, too, that the stops are pushed right down into the rack. Throw the frame back to normal position. The operative keys are FF 45.

The rack (GG and JJ 43) is reversible, so that two different settings of stops can be made, either of which can be turned into use at will. To reverse, turn the thumb-piece (JJ 46) at either end of the rack.

YOST.—A 4-key column finder is standard on this machine. The four operative keys are above the keyboard proper. The setting of the stops is similar to that in the Remington and the Smith Premier.

Three machines have a tabulator of the third kind—generally known as a decimal tabulator—the Remington, the L. C. Smith, and the Smith Premier.

REMINGTON No. 11.—In this model, the decimal tabulator takes the place of the column selector of the No. 10.

The setting of the stops is facilitated by provision of a "Tab. Stop Set" key (*U* 53610) at the left-hand top corner of the keyboard. To use this, first

set the carriage at a point where it is desired to set a stop; then depress the "Tab. Stop Set" key, and the stop will be set. So proceed at different points till all required stops are set, there being no limit to the number. To restore the stops to their normal positions—that is to say, to put them out of range—proceed as follows: Bring the carriage either to the extreme right, or to the extreme left. Now press the finger-piece (*U* 52820), run the carriage along, and all stops will be pressed back out of range.

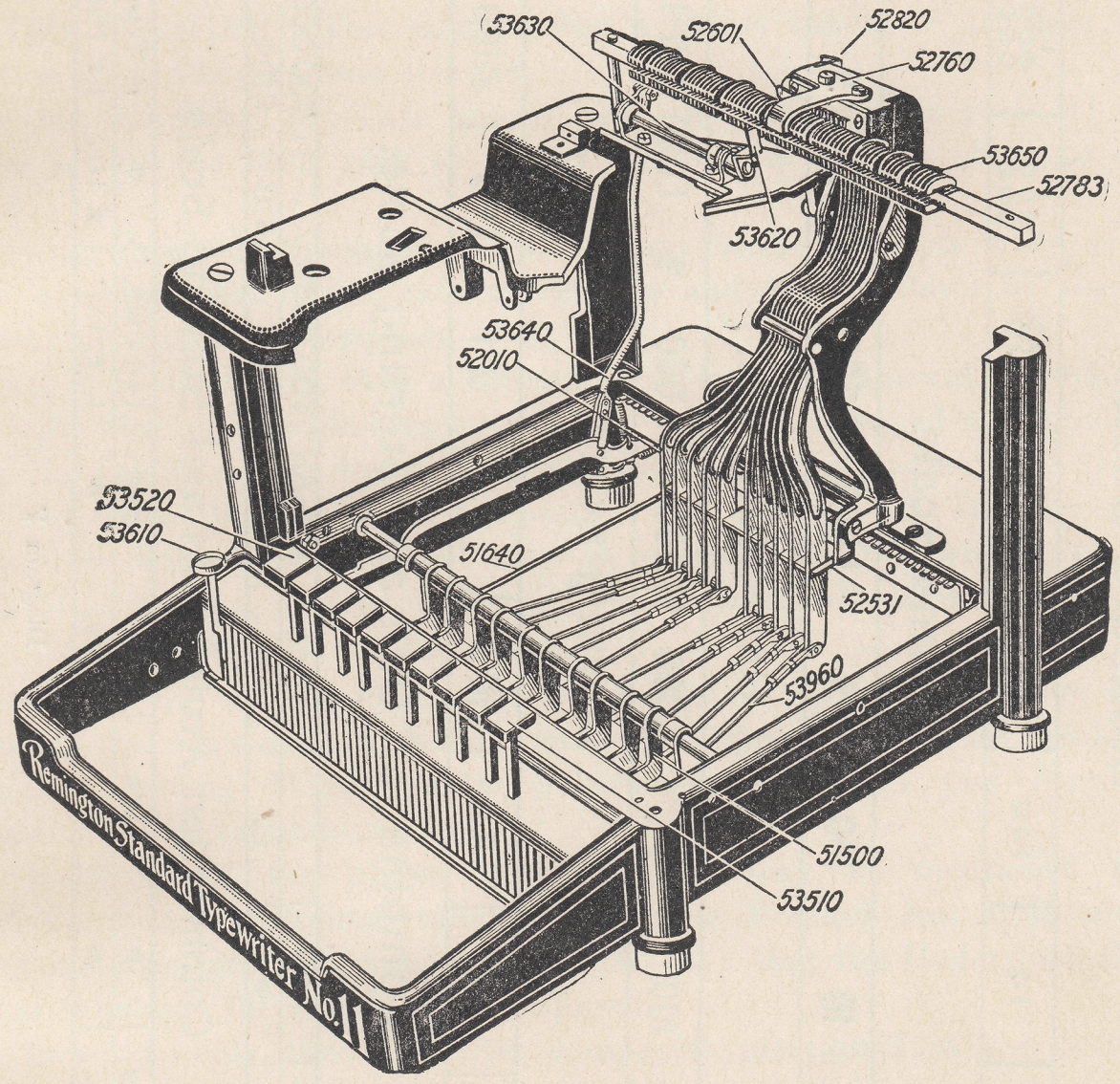


Diagram *U*

TABULATOR MECHANISM (REMINGTON)

To simplify reference to the ten tabular keys, *U* 53520, and to indicate which key should be depressed to bring the carriage to the position required by the operator, a tabular scale is provided, lying to the rear of the tabulator keys. As the tabulator is generally used in this country for ordinary figure columns and for £ s. d. columns, the "combination scale" (Diagram *V*) is fitted as standard, though any of the other scales illustrated can be fitted by the operator, to accommodate other classes of work.

Standard Scale

•	1	10	100	,000	,000	,000	,000	,000	,000

Comma Scale

•	1	10	100	,	1,000	10,000	100,000	,	1,000,000

Unit Scale

1	10	100	,	1,000	10,000	100,000	,	1,000,000	10,000,000

Sterling Scale.

1d	10d	•	1s	10s	•	£1	£10	£100	£1000

Combination Unit and Sterling Scale.

1	10	100	,	1000	10 000	100 000	,	1 000 000	10 000 000
1d.	10 d.	•	1s.	10s.	•	£1	£10	£100	£1000

Combination Avoirdupois and Sterling Scale.

lb.	10 lbs.	•	Qrs.	•	cwt.	10 cwt.	•	Ton.	10 tons.
1d.	10 d.	•	1s	10s.	•	£1.	£10.	£100.	£1000.

Diagram *V*

TABULATOR SCALES (REMINGTON)

L. C. SMITH.—This machine has a decimal 5-key tabulator fitted as standard. The tabulator keys (DD 3) are just above the regular keyboard. The tabulator stops are set as follows: Put a sheet of paper, or a form, into the machine, and bring to the printing position that point on the paper where you wish the decimal point in the first column to appear: note to what number the indicator (DD 7) points on the carriage scale, and set one of the tabulator stops (EE 3) at the corresponding number on the tabulator rack (EE 2), repeating the operation for each column desired.

SMITH PREMIER.—This machine has a 10-key tabulator fitted as standard, in addition to a 4-key column selector.

The ten tabulator keys are shown over the keyboard in Plate II 47. The stops are set on the same rack as carries the column selector stops, as described on p. 66.

They are also set in the same way, so that no further description here is needed.

The combined use of the column selector and the tabulator in one machine does, however, call for description.

When it is desired to skip a column, and write an amount in some column to the right thereof, the first figure position may be obtained by simultaneously pressing the tabulator key representing the highest figure position, and the column selector key indicating the desired column. The carriage will then automatically move to the desired column, and stop in position for the writing of the first figure in the amount desired. This device obviates all need of two or more successive depressions of a tabulator key.

NOTE.—Several of the typewriter companies fit decimal tabulators as special attachments, and some of them build decimal tabulators into special machines. All companies supplying Writing-Adding-Subtracting machines (*see* Section XLI) incorporate decimal tabulators therein.

As instances of the above statements, it may be mentioned that the Monarch Co. builds a decimal tabulator into the Monarch No. 4. (a ninety-two-character machine, generally similar to the No. 3); that the Underwood Co. makes a decimal tabulator for supply when required.

As, however, only the typewriter companies mentioned in the body of the present section supply decimal inbuilt tabulators on their standard machines, it has not been thought necessary to complicate a complex subject by describing others.

XXXIII

CARRIAGE BRAKING DEVICES

WHEN, in course of tabulation, the carriage moves from point to point by "long hops," it acquires considerable momentum, and is apt to meet the stop with a "bump." To minimize the concussion, some machines are fitted with braking devices on the carriage.

There are two forms of braking device. The first form is fitted to the Barlock, Empire No. 2, and Underwood machines, and is under control of the operator.

BARLOCK.—The movement of the carriage is governed by a brake actuated by the tabulator key. Hence, the greater the force with which the key is depressed, the slower is the movement of the carriage from point to point.

EMPIRE No. 1.—As the Empire No. 1 has no tabulator, no braking device is necessary.

EMPIRE No. 2.—Same remarks apply as to the BARLOCK above.

UNDERWOOD.—An automatic friction brake, in the form of a leather cushion, is provided. Depression of the tabular key brings this leather cushion into contact with the tabular frame (LL 5 or 6), and so slows the carriage. The harder the tabular key is depressed, the slower the carriage moves in the "jump."

The second form of carriage brake is automatic, tending to check the carriage more effectively the bigger the jump the carriage makes. It is embodied in the REMINGTON, YOST, the wide-carriage MONARCH, and the UNDERWOOD when fitted with the Company's special decimal tabulator. The brake comes into action whenever the carriage jumps.

As neither form of carriage-brake requires any attention or adjustment from the operator, no further description need be given here.

XXXIV

REMOVAL AND REPLACEMENT OF THE CYLINDER

IT is sometimes a convenience to be able to exchange the cylinder on the machine for one with a harder or softer surface. The construction of certain machines facilitates this.

BARLOCK.—To remove the platen (A or D 363) from the carriage, first raise the scale, and let it stand upright : push down the nickel-plated thumb-pieces (A or D 390), and lift the platen out of its bearings. To replace the platen, or substitute another, put the platen on the carriage in place to be caught by the latches (A or D 390), and then push the platen towards the front of the machine.

REMINGTON.—To remove the cylinder, proceed thus : Press the shift lock (X 17520), thus locking the carriage as for upper-case, loosen the two set-screws in the right-hand cylinder thumb-wheel (X 31671), and remove the thumb-wheel. Then loosen the cylinder set-screws in the left-hand cylinder-head. This allows the left cylinder thumb-wheel (X 31681) to be removed. When the left cylinder thumb-wheel is removed, a space-collar drops down, which allows the cylinder to be pushed to the left. Then, by lifting up the left end first, remove the cylinder by pulling firmly towards the left.

To replace the cylinder, first insert the shaft at the right-hand end of the cylinder. Be sure that the ratchet-wheel on the end of the cylinder is beneath the roll of the cylinder stop-spring (Y 31702). Place the space-collar in position between the left cylinder-head and the cylinder frame, at the same time inserting the left cylinder thumb-wheel (X 31681). Then tighten the set-screws in the left cylinder-head. Replace the right cylinder thumb-wheel (X 31671), and tighten the screws.

L. C. SMITH.—To remove the platen, slide the platen locking pieces (DD 17 and 23) as far back as they will go. The platen may then be lifted out of its bearings. To replace the platen, pull the paper-fingers forward, drop the cylinder into place, and reverse the locking pieces.

SMITH PREMIER.—To remove the platen, rock it backwards, raise the right-hand end slightly, and draw it from the machine. To replace the platen, reverse the operation, first inserting the pin (HH 16) on the left end of the platen-cradle into the hole (II 17) on the inside of the left carriage frame, when the platen will drop into position. Do not press forward the paper release lever (GG 15), when replacing or rocking the platen. Should it inadvertently be pressed forward, rock the platen back by pressing the concave thumb-piece (HH 14), when the release lever will spring back into its proper place.

XXXV

REMOVAL AND REPLACEMENT OF THE CARRIAGE

For certain operations in some machines, it is necessary to remove the carriage. On some machines, it is possible to fit carriages of different widths. The following instructions, applicable to the several machines, will therefore be helpful.

BARLOCK.—Push the carriage to the right, and give the half-headed screw a turn to the left: bring the carriage to the left as far as it will go, by means of the knob (B 81): disengage the carriage-band (B 77) from its seat on the carriage, and hook it in the slot of the screw rising from the base (B 82). Turn the half-headed screw to the left, lift the carriage and ball-race frame from the machine.

To replace, put the carriage to the left of the machine, and allow it to drop into position so that the half-headed screws can lock it to the base: then replace the carriage tension band.

Barlock paper carriages are made in seven sizes, taking paper $9\frac{1}{2}$, 12, 14, 16, 18, 22, and 27 inches wide. All are interchangeable on the ordinary-size machine.

EMPIRE No. 1.—If it ever becomes necessary to remove the carriage from its track (which should not be the case unless the machine has been allowed to get

exceedingly dirty from neglect), the following directions should be carefully observed. First, remove the left margin stop, by slipping it off to the left, being careful that the spring for its extension arm does not get loose: take off the right margin stop, which is attached by a thumb-screw; then unhook the right-hand end of the chain from its slot in the carriage arm, being very careful that it does not slip out of the fingers, and anchor it firmly to the pin (E 64 A) in the main frame at the right. This precaution is necessary to prevent the release and unwinding of the main spring in the drum below the left-hand ribbon spool. Next, fully loosen the bell-trip thumb-screw (F 156), and remove the sliding bracket (F 152) from its place on the bar. Press the carriage release key (G 53) and the space-key, at the same time sliding the carriage to the left, when it is easily lifted from the ways (*see* Plate J).

To return the carriage to the ways, be sure that its back rail is properly entered between the head of the hold-down screw (at the left end of the rear rail of the frame) and the track roll below, on which it travels: depress the vertically moving portion of the carriage by light pressure on the platen, till the roll (J 84) is seen to enter its path in the centre of the frame properly. With the carriage well to the right, connect the chain in its position, and restore the bell-trip bracket (F 152) to place. After replacement of the right and left-hand margin stops, the machine is ready for work.

The OLIVER carriage can be instantly removed by pulling it to the left (third finger on release) as described in Section XIX—THE CARRIAGE RELEASE—OLIVER, the key marked "Right" being simultaneously depressed. To replace carriage, hold it level in left hand, and, resting the guide (Q D) at right-hand end of it, on the main rail (V L 2), pass it on towards the right. It picks up its draw-cord automatically.

SMITH PREMIER.—The construction of this machine admits of the use of carriages of different widths. To remove the carriage, first set it slightly to the left, as shown in Plate (GG), and remove the screw (GG 22) in the carriage bed rail. Then move the carriage an equal distance to the right, exposing the left bed rail screw (FF 22), and remove the screw. Lift off the carriage, including the bed rail. To substitute another carriage, reverse the operation, replacing the left screw first.

YOST No. 15.—To remove the carriage, press with the forefingers the lock-bolts (Diagram *W V*), which will be found just below the platen thumb-wheels; raise the carriage by these thumb-wheels, with a backward swing to remove the bolts from their sockets, and then lift in an upward and forward direction.

To replace the carriage.—Hold the carriage by the platen thumb-wheels at such an angle that the guides in the carriage ends point downwards. Lower the carriage until the guides engage the guide-pins. Press in the two lock bolts, and the carriage will fall into its normal position.

YOST No. 20.—To remove the carriage, hold it firmly by the thumb-wheels, raise it with a backward swing, and lift in an upward and forward direction.

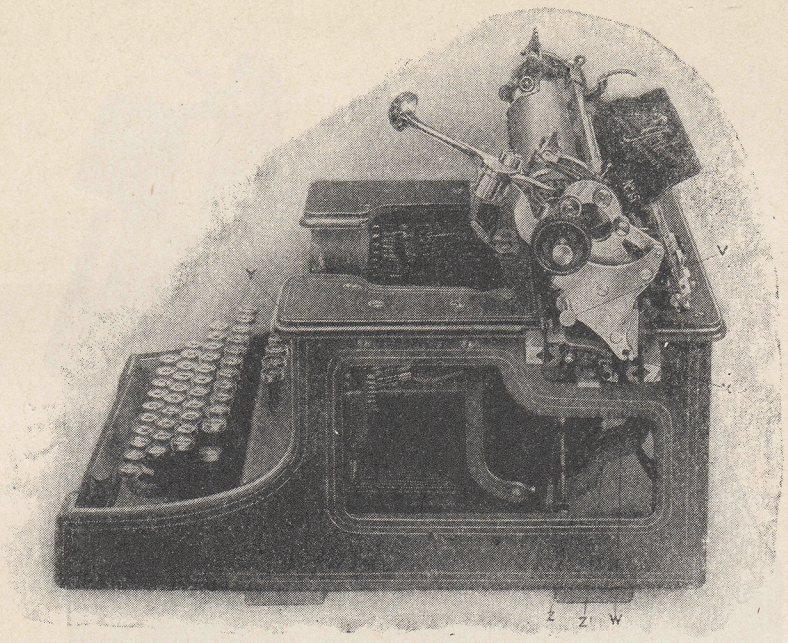


Diagram *W*

REMOVING THE CARRIAGE (YOST)

In the larger models, fitted with C, D, E, or F carriages, the two carriage lock buttons must first be freed. (Diagram *X*.)

To replace the carriage.—Hold the carriage by the thumb-wheels at such an

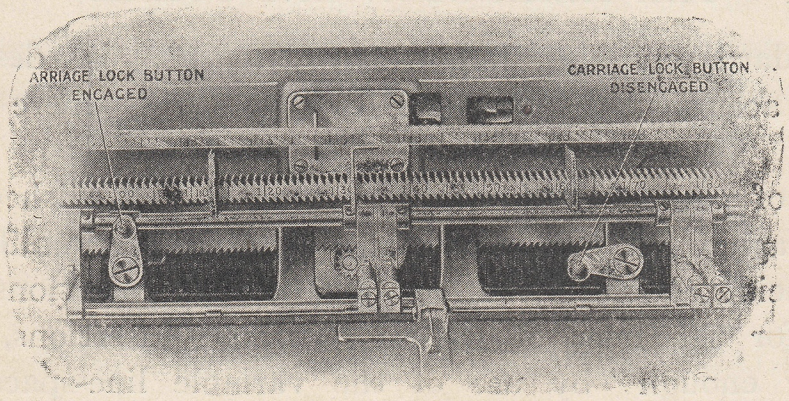


Diagram *X*

CARRIAGE LOCK BUTTONS (YOST)

angle that the guides in the carriage ends point downwards, and lower it until the guides engage the guide-pins. A downward pressure will bring it into the normal position. In the larger models, fitted with C, D, E, or F carriages, first see that

the carriage lock buttons are clear, viz., at right angles to the main casting, and parallel with the platen. When the carriage is in its normal position, these lock buttons must be turned so as to grip the carriage rail. (Diagram *Y*.)

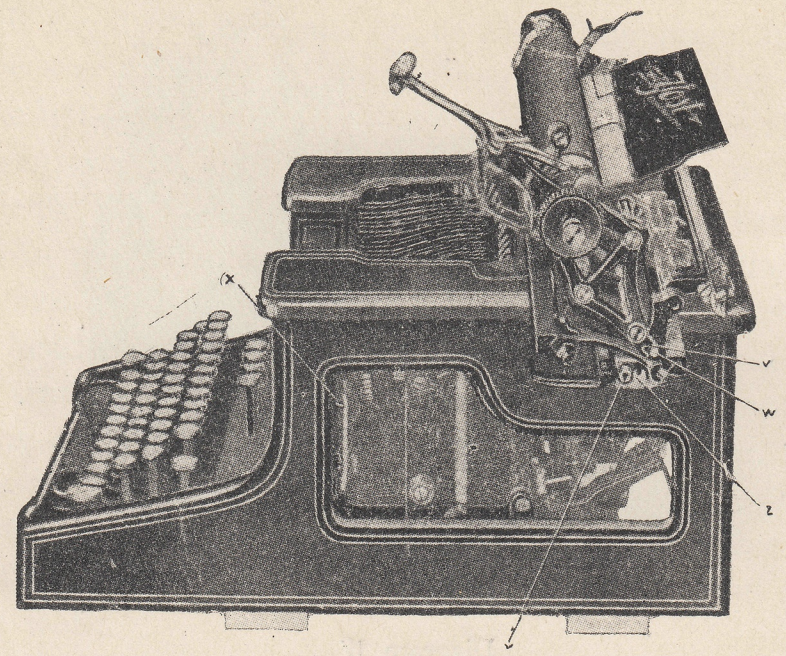


Diagram *Y*

REPLACING THE CARRIAGE (YOST)

XXXVI

THE REMINGTON END-GUIDES

This device, standard on the Remington No. 11, is designed to ensure absolute horizontal accuracy of the paper-feed in cases where such accuracy is essential.

When a sheet of paper is fed into a machine not furnished with end-guides, is withdrawn, and again fed into position, it is extremely unlikely that the lines of writing will coincide absolutely in position in both insertions. Ordinarily, this does not matter, for the lines of writing, in both insertions, can be made to correspond "nearly enough" by use of the variable line-space mechanism, and by manual adjustment.

In certain kinds of work, however, exact correspondence is important, and it is also important that it should be automatically and instantaneously secured. This is done by the end-guides.

The end-guides, or needle-stops, of the No. 11 Remington are located under the cylinder, out of sight of the operator. They form a stop against which the top edge of the paper can be laid at the time of insertion, and this stop ensures

that the sheet shall be in a certain definite position in relation to the cylinder when it is gripped by the feed-rolls. At any subsequent reinsertion, therefore, it will always have the same starting point, and the writing lines, therefore, will fall "every time" at the same distance from the top edge.

To operate.—In inserting the paper, press back the feed-roll release-lever (X 33740) with the left hand, and, holding the paper firmly in the right hand, drop the sheet down upon the needle-bar stops. Then allow the feed-roll release-lever to return to its normal position.

If, when the paper is being inserted, its edge is lightly pressed against the side-guide (X 33922), both horizontal and vertical accuracy of feed are assured, and it becomes possible to remove and replace a sheet of paper any number of times, writing each time the same line in vertical and horizontal register, without varying by a hair's breadth.

This feature is of special importance to firms who send out to customers monthly statements in detail of daily purchases—each statement being built up from day to day as the purchases are made. This, of course, involves the keeping of statements on file during the month, and withdrawing them, when necessary, for the purpose of adding new items. Registration must therefore be accurate, or the statements would be very unsightly: it must also be speedily secured, or the work would be too slow.

It has already been pointed out that corrections are simplified if the end-guides are used when the paper is being inserted. (*See* Section XXIV—CORRECTIONS.)

Care should be taken when using the feed-roll release lever on the No. 11, for adjusting a typewritten sheet to the line of writing, previous to making a correction, or for any other purpose. If the feed-roll release lever is depressed to its extreme limit, the needle points are thrust on to the paper, and will hold it more or less firmly, thus rendering it difficult to adjust its position. *Slight* pressure on the feed-roll release lever will, however, be sufficient to disengage the feed-rolls, and will not bring the points against the paper, which can then be freely adjusted.

XXXVII

THE UNDERWOOD CENTRING SCALE

THE centring scale is designed for centring headings, titles of chapters, etc., on the paper. It takes the place of the ordinary scale.

The upper part is, in fact, the ordinary scale, but the lower part reverses the direction of the degree numbers (0, 5, 10, 15, etc.), and every degree of the lower part is equal to two degrees of the upper part. (*See* Diagram Z.)

To illustrate the use of this scale, let us suppose that we wished to centre the words, UNDERWOOD TYPEWRITER.

We insert the paper as nearly as possible centrally on the cylinder, and set the carriage pointer (or scale) indicator, at 0, by pulling the carriage right back to the right, and freeing the stop regulating the left-hand margin. We then depress the space-bar once for each character and space in the heading, and note the final position of the indicator in regard to the lower scale. We shall find that the indicator will stand at 30 on the lower scale. We therefore move the carriage so

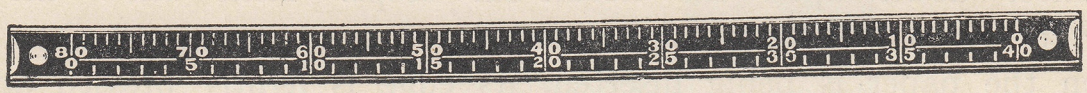


Diagram *Z*

CENTRING SCALE (UNDERWOOD)

that the indicator stands at 30 on the upper scale, and write the initial U there. When the heading is written, we shall find that it is centred on the paper.

If, after spacing out the heading on the lower scale, the indicator stops between two of the degrees on that scale, space once more, and then refer to the number at which the pointer is located, setting the carriage at the corresponding degree of the upper scale.

XXXVIII

THE MONARCH SPEED ESCAPEMENT

THE Monarch dogs are adjustable for high-speed work, though the Company does not send out machines with the dogs so adjusted.

Diagram AA shows the dogs adjusted for ordinary work. In this diagram, A is the holding (or rigid) dog, B is the stepping (or loose) dog, and C is the reversing lever that is adjustably secured to the dog A by the screw D, the lower end covering the lug.

Diagram BB shows the dogs arranged for high-speed work. It will be noted that the lower end of the lever C does not now cover the lug.

In practice, the difference between the two settings is this. When set (as in Diagram AA) for ordinary work, dog B does not jump till after the letter actuated has been printed. When set (as in Diagram BB) for speed work, the dog B is free to jump while the type-bar is on the upstroke. Practically, however, the typebar moves so quickly, that the carriage has not time to respond to the jumping of the dog until the character has been printed. The responsiveness of the carriage, with the speed-adjustment made, is, however, increased, so that it will accommodate a great number of key-depressions per second.

For ordinary purposes, the setting of the dogs as in Diagram AA is preferable, as the action of the high-speed setting sacrifices something in the way of accuracy of registration at the printing-point. The standard adjustment is quite capable of

accommodating any speed likely to be reached in practical work by the most expert operator.

To change from one adjustment to the other, it is only necessary to loosen

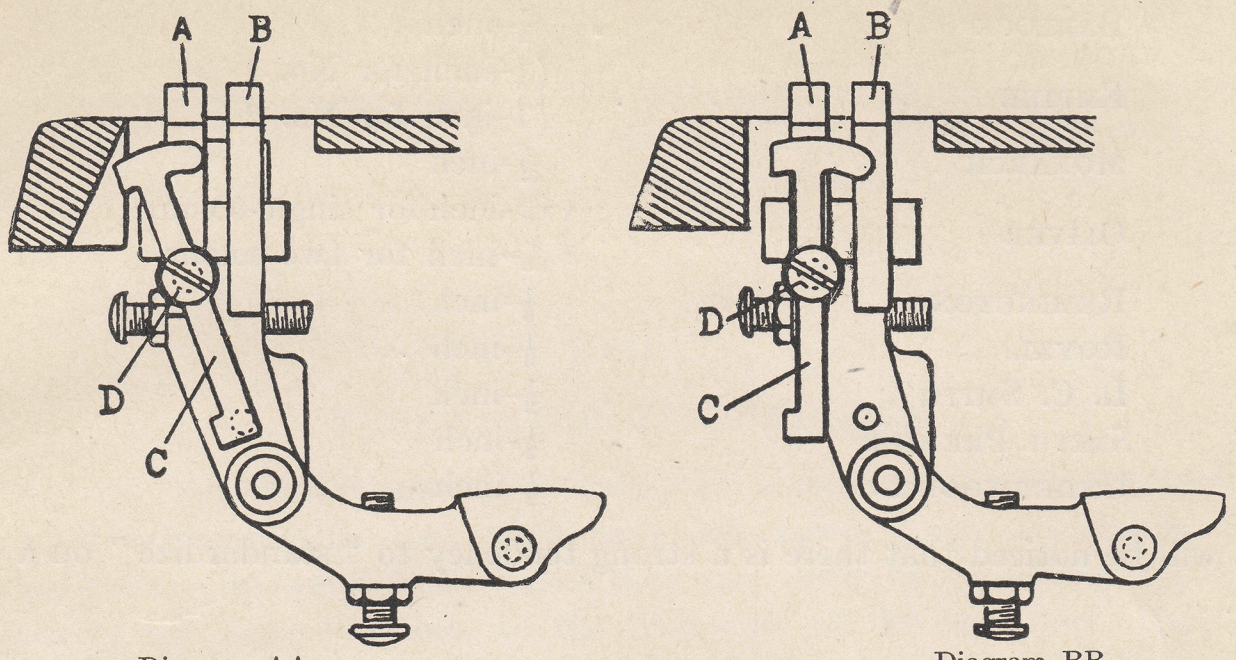


Diagram AA Diagram BB

SPEED ESCAPEMENT (MONARCH)

the screw D, and set the lever C as in Diagram AA for ordinary escapement, or as in Diagram BB for high-speed escapement. Care should be taken to tighten screw D after either adjustment has been made.

XXXIX

THE OLIVER RULING PENCIL

RULING may be accomplished by means of the ruling pencil (V H 2). Swing the pencil down until it is in contact with the platen, and hold it down with the thumb and forefinger of the right hand, while the carriage is pulled to the left, or pushed to the right, for horizontal lines. Vertical lines are made by turning the platen backward or forward by means of the knob on carriage end, the lever (P E) having been first thrown back to release the ratchet, and thus give free motion to the platen. Numerous carbon copies can be ruled simultaneously.

XL

RIBBON WIDTHS

THE following are the widths of ribbons used on the ten machines described in this book. It must not be assumed, however, that because a ribbon of the appropriate width is forthcoming, it is therefore suitable for the machine for which it is intended. It must, either before or after purchase, be wound on an

appropriate spool in most cases. Further, a ribbon intended for a particular machine must, in most cases, be fitted with certain kinds of clips to allow of attachment.

BARLOCK	$\frac{1}{2}$–inch
EMPIRE	$\frac{7}{8}$–inch for No. 1 1–inch for No. 2
MONARCH	$\frac{1}{2}$–inch
OLIVER	$\frac{7}{16}$–inch for single-colour $\frac{9}{16}$–inch for two-colour
REMINGTON	$\frac{1}{2}$–inch
ROYAL	$\frac{1}{2}$–inch
L. C. SMITH	$\frac{1}{2}$–inch
SMITH PREMIER	$\frac{1}{2}$–inch
UNDERWOOD	$\frac{1}{2}$–inch

It will be noticed that there is a strong tendency to " standardize " on a $\frac{1}{2}$–inch ribbon.

XLI

WRITING–ADDING–SUBTRACTING MACHINES

SEVERAL of the companies have of late years built into their typewriters mechanism which renders them capable of arithmetical calculations of all kinds involving adding and subtracting.

Not all the companies who have in this way developed their machines, have yet tackled the problems of adapting them to calculations in sterling currency, though some of them have done so.

So much work involving figures is written on the typewriter—*e.g.*, invoices, statements, balance-sheets, etc.—that there is evidently room for a machine that will make the calculations while the actual writing is being done. This is precisely what the writing–adding–subtracting machine does.

Briefly, the effect of extending the use of the typewriter in this way is this.

When the calculating mechanism is brought into action (by touch on a lever), every figure written is either added or subtracted in the recording mechanism—added, if the machine is set for addition; subtracted, if it is set for subtraction.

Various checks are provided to render it physically impossible for the operator to produce wrong results, or to transfer to paper wrong figures representing the correct results recorded by the machine. Further, the machine will locate errors made in previous pen or pencil calculations.

Although comparatively a new-comer, the combined writing–calculating machine has already made a name for itself in the counting-house, where there are obviously so many kinds of work where " cast-iron " accuracy is all important—work involving both ordinary writing and figuring.

As, however, this extension of the usefulness of the typewriter into the domain of figures takes it out of the rank of the typewriter pure and simple, it would be out of place here to give any detailed description of the construction or the operation of the machine. Indeed, such a description would hardly appeal to the average operator, for whose benefit this book has been written.

The best-known instruments of the kind are the Wahl Adding-Subtracting machine (which has been adapted to the Monarch, Remington, Smith Premier, and Yost typewriters), and the Underwood Addendograph and Book-keeping Machines.

XLII

TYPEWRITER TERMINOLOGY

Now that the typewriter companies have, to some extent, standardized their machines, it is regrettable that they have not more nearly standardized their mechanical terms. In very many cases, they use different terms for the same—or practically the same—devices, to the confusion of the operator. Here are a few of the more striking cases in question.

Cylinder, *platen*, and *platen-roll* are terms used by various typewriter companies for the rubber-covered roller which carries the paper. The writer urges that *cylinder* is the most correct term. By derivation, a *platen* should be flat, which the typewriter roller is not.

Cylinder-knobs, *cylinder thumb-wheels*, *cylinder-handles*, *cylinder-wheels*, *wheels*, and *thumb-twirlers* (!) are different names for the same parts. *Cylinder-knobs* seems to be the best term.

The *marginal stop*, the *margin stop*, the *margin regulator stop*, the *margin block*, are the same thing.

In this connection, by the way, it may be mentioned that considerable confusion has arisen through speaking of the right-hand and left-hand marginal stops on certain machines. Sometimes, the right-hand stop on the machine regulates the left-hand margin, and *vice versa*. Then it is that confusion arises. When the right-hand stop regulates the right-hand margin, and the left-hand stop regulates the left-hand margin, no such confusion can arise.

The *keyboard-lock* is the same thing as the *line-lock*.

Paper-fingers are the same as *paper-guides*.

Spools are *reels*.

Feed-roll release lever, *feed-roll release key*, *paper release key*, *pressure release handle*, all represent the same mechanism.

Ribbon holder = *ribbon vibrator*, or *ribbon fork*.

Carriage return lever = *line space lever* = *line space handle*.

Space bar = *space key*. Surely it *is* a bar.

Key = button. Surely the term *button* is quite inapplicable to this part of the typewriter.

Back space key = back spacer = space back.

Column selector = column finder.

Paper table = paper shelf.

Line-space regulator = line-space gauge.

Paper-guide = paper-gauge = bill-guide.

Two-colour = Bichrome.

Tabulator.—Different words are badly needed to distinguish between the three forms of tabulator. (Section **XXXII.**) True, the second kind of tabulator has been given the name of column selector, or column finder, but the name is not instructive. One of the typewriter companies has recently borrowed a term from the motorist's vocabulary, and called this device a "self-starter." The name looks like "catching on," but it is, strictly speaking, not very applicable to the device itself, which is really a self-stopper.

Printed by Sir Isaac Pitman & Sons, Ltd., Bath, England
v—(1304)